MARKETS FOR THE PRODUCTS OF CROPLAND IN

ALASKA

(Progress Report)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
cooperating with
ALASKA AGRICULTURAL EXPERIMENT STATION

WASHINGTON, D. C.
JULY 1950

ACKNOWLEDGMENTS

This report summarizes the combined judgment of many persons in both Alaska and the States. The authors are fully responsible for all statements made, but they wish to acknowledge their debt to the following persons and groups:

The U. S. Department of the Interior - U. S. Department of Agriculture Committee on Group Settlement in Alaska, which requested that the study be made;

The Matanuska Valley Farmers Co-operating Association, represented by James Wilson and Harold Stefan; The Tanana Valley Farmers Co-operative Association, represented by Ed Davis; and Alaska Growers, Inc., represented by Walter Pippel;

General Nathan Twining and members of his staff in the Alaska Command, for their interest in improving the market for Alaska farm products, and for their discussion of the marketing problems;

Don L. Irwin, Director of the Alaska Experiment Stations, who actively helped to plan the project and who advised throughout; other staff members of the Experiment Stations, and employees in Alaska of the Bureau of Land Management of the Department of Interior, the Soil Conservation Service, Alaska Rural Rehabilitation Corporation, and Farmers Home Administration; O. L. Mimms, W. U. Fuhriman, and J. L. Paschal, Bureau of Agricultural Economics, S. B. Fracker, Agricultural Research Administration, and E. H. Wiecking, Office of the Secretary, U. S. Department of Agriculture; and others in public offices;

The farmers, merchants, and housewives who discussed their problems of quality, supply, price, and other factors; and

Jack Warshauer, of the University of Alaska, who conducted part of the field work.

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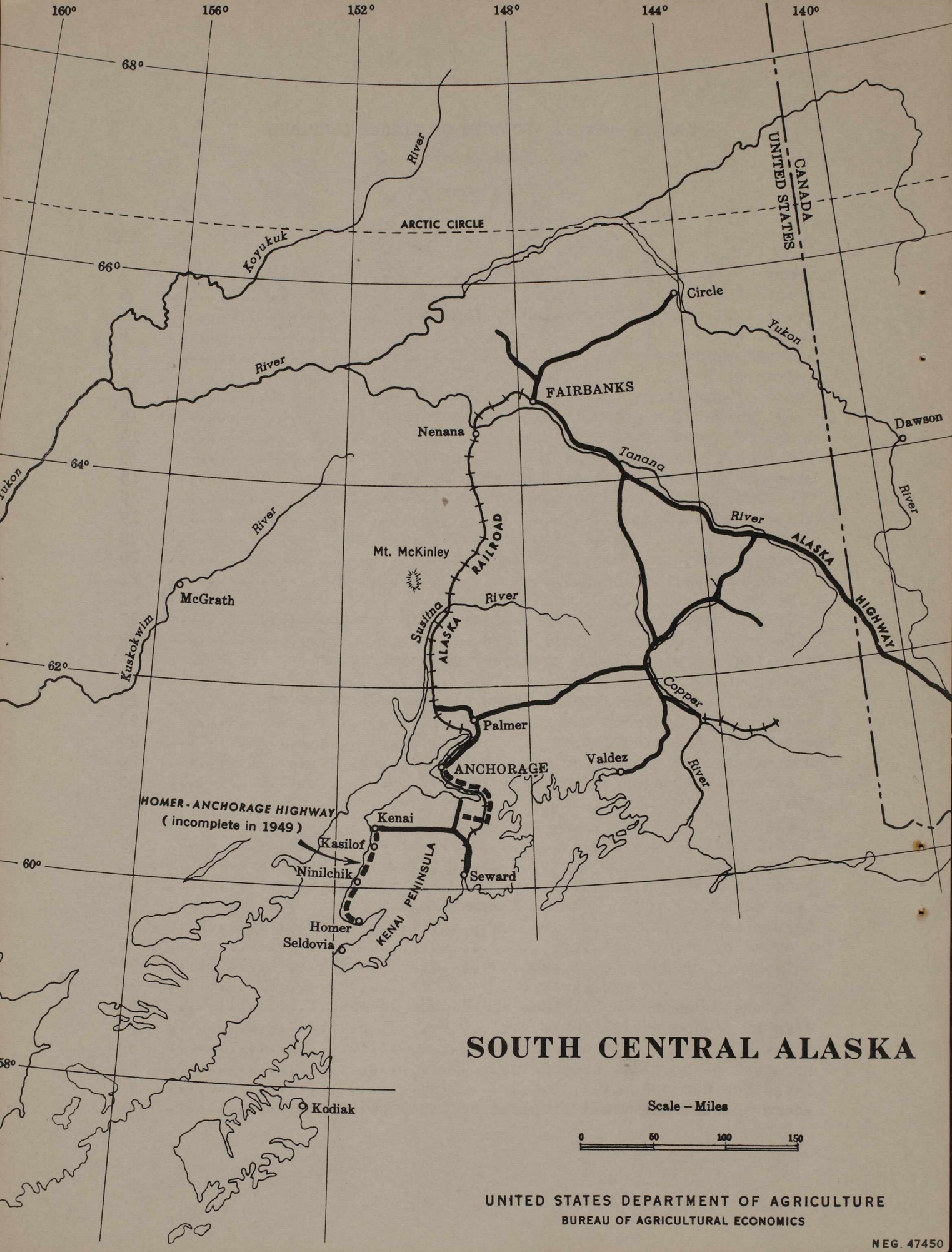
160°
156°
152°
148°
144°
140°
68°
66°
64°
62°
60°
58°
ARCTIC CIRCLE
CANADA
UNITED STATES
Koyukuk River
Yukon River
Kuskokwim River
Tanana River
Susitna River
Copper River
Circle
FAIRBANKS
Nenana
Dawson
Mt. McKinley
McGrath
ALASKA RAILROAD
ALASKA HIGHWAY
Palmer
ANCHORAGE
Valdez
HOMER-ANCHORAGE HIGHWAY
(incomplete in 1949)
Kenai
Kasilof
Ninilchik
Seward
KENAI PENINSULA
Homer
Seldovia
Kodiak
SOUTH CENTRAL ALASKA
Scale – Miles
0
50
100
150
UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
NEG. 47450

SUMMARY

The cropland of importance in Alaska, now developed or considered likely to be developed, appears to be limited to the south-central part of the mainland, from Fairbanks to and including the Kenai Peninsula south of Anchorage. This general area is designated as Central Alaska. The principal present farming area is in the Matanuska Valley, lying about 50 miles north of Anchorage. Smaller scattered areas are located around Fairbanks, and on the Kenai Peninsula.

Alaska has physical conditions of temperature, length of growing season, rainfall, plant adaptability, and other physical factors which sharply limit the kind of crops that can be grown. High latitudes and high altitudes have similar effects on vegetative growth - "timberline" is about 1,800 feet in elevation on the mountains around the Matanuska Valley, and it is about 10,000 feet in the middle of the United States. Similarly, the range of adapted farm crops and the growing season in the Matanuska Valley are in general comparable to those in the valleys of the Rocky Mountains of Colorado at elevations above 8,000 feet.

The crops that can be grown in the Matansuka Valley, and in other parts of Central Alaska, are grass hay and pasture, yellow blossom or Siberian alfalfa, some of the clovers, and certain forage, cereal, and field-pea crops for silage; early-maturing varieties of barley, oats, and wheat; potatoes, and such hardy cool-weather vegetables as cabbage, cauliflower, celery, lettuce, green peas, beets, carrots, and turnips; and such small fruit as strawberries, raspberries, and currants.

The list of major crops that cannot be produced on an outdoor commercial scale with the temperatures and growing season found in Alaska includes beans, corn, tomatoes, all deciduous tree fruits, grapes, melons, sweetpotatoes, peanuts and all tree nuts, soybeans, sorghums, and the purple-blossom alfalfa.

Certain important economic conditions in Alaska limit its agricultural possibilities. Chief of these are the following factors.

1. The relatively high costs of production.

2. Distances from the States and Canada, and within Alaska itself, and high transportation charges which add to the cost of all shipped-in merchandise and production goods, and thereby influence the high wages needed to compensate for the high living costs.

3. A market that is small in terms of population, that is restricted to this population by physical limitations, and that is complicated by the unpredictable size of the population from year to year.

4. Always the competition, or threat of competition, with food products from areas that have lower costs of production.

"High freight rates handicap the northern entrepreneur who must pay wages and import food or merchandise, and the northern producer who wishes to sell his product on middle latitude markets. But the same high rates act as a 'protective tariff' for the northern producer selling on local markets, especially if he is able to avoid hiring labor. Reduce the cost of transportation and imports will compete with local products." 1/

Thus the price in Alaska for locally grown farm products is basically the States or Canadian market price plus the cost of transportation and handling to Alaska, plus or minus any price differential that normally prevails between the local item and the shipped-in item. This tends to hold so long as the volume of the local product does not exceed the local demand; beyond that point, prices may drop rather sharply as growers compete for their only outlet. On the bulky and perishable products - such as fluid milk, potatoes, and fresh vegetables - the high transportation charges from the States give the producer in Alaska a substantial margin above prices in the States. On concentrated products that have a high value per pound, he has less price advantage because freight is a less important factor in the total price.

Fresh fluid milk and eggs are the two main animal products of feed grown on local cropland. There is little possibility that butter or cheese will be produced locally in competition with these items from the States or Canada, except during short periods of seasonal surplus milk. Nor is it likely that beef cattle and sheep will be carried in commercial numbers through 6 to 8 months of winter feeding on forage from Alaska cropland, in competition with areas that are better adapted to livestock raising. Beef, lamb, and wool, probably will be produced on the natural grasslands of the Alaska Peninsula, on the Aleutians, and on other nearby islands, provided the coastal plains and beaches of those areas are reserved for winter grazing and are not allowed to be broken up for cropland.

The farm products that can be grown under Alaska's physical limitations are produced also in all other agricultural areas of the temperate and sub-Arctic zones. So are the animal products that can be derived from them. Because of this, and because of high transportation charges on goods shipped out as well as in, it is not economically feasible to ship products of the cropland of Central Alaska to the States, to Canada, or to other foreign countries; and probably not to the towns of Southeastern Alaska. The market for the agricultural products of Central Alaska is the population,

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1/ Jones, Stephen B. The Arctic: Problems and Possibilities. Yale Institute of International Studies. New Haven. 1948.

civilian and military, on the mainland of Alaska, excluding the southeastern Panhandle. The native Eskimos, Aleuts, and Indians, are widely scattered over the Territory, for the most part and they will make little use of the products of Alaska cropland in the foreseeable future. Therefore the market will be composed almost entirely of the white population on the mainland.

The Armed Forces are now the largest single buyer of local farm products. This market has not been fully supplied by local producers, even in regard to the items raised by them, because of lack of dependability of product, irregularity of supply, and other procurement difficulties. Both the buying agencies and the farmers are striving to improve upon past relations. Grading problems are continuous, and they are likely to remain so, whether the market is military or civilian, until a system of Federal-Territorial grading by licensed inspectors is established.

Many civilian consumers use few potatoes and vegetables that are grown locally, and many retailers carry practically none. Both have been disappointed by low quality, lack of uniformity in the products, and irregularity in supplies. Their feeling against one local item often is projected to include all items of the area. There is a definite need for extension marketing specialists and additional home demonstration leaders, to acquaint producers, retailers, and housewives, with the problems involved in the use of locally grown food crops.

Pending the results of the Census of 1950, available estimates of size and type of population in Alaska indicate that the total white civilian population on the mainland numbers about 40,000. Although the size of the military forces stationed in Alaska is not generally known, the Armed Forces announce in advance of each season the quantities of local farm products for which they will contract.

In this report the potential demand for each local product is estimated at the probable rate of per capita consumption in Alaska. Such per capita rates are based on United States averages, with modifications according to the length of the local marketing season, and other local circumstances. From these rates are computed the quantities of each product that may be utilized by 10,000 white residents, civilian and military. The market for any size of population can be figured from this base.

The quantities of each food crop or animal product for 10,000 population are then converted into the acreages that would be required for their production. These acreages are computed at present usual yields in Alaska of food and feed crops. They are calculated also at yields 20 percent higher, on the assumption that improved strains or varieties of crops will be developed or introduced, and better farming methods and practices will be adopted, resulting in higher marketable yields per acre.

Under the assumptions outlined in this report, the total cropland that would be needed to supply the local products to a population of 50,000 white civilians and military personnel would be between 12,000 and

21,000 acres. Twice this population would about double the needs for cropland; a decline in population, either civilian or military, would proportionally reduce the acreage that would be used. The cropland now cleared in Central Alaska is estimated at 12,500 acres. Only about 9,000 acres were cropped during 1949; the remainder was idle. Under any of the assumptions, not more than 8,500 additional acres of cropland would be required to supply the locally adapted farm products to a population of 50,000, at present usual yields per acre. If average yields are increased as much as 20 percent and the higher assumptions of per capita consumption are attained, 4,500 more acres of cropland would be needed. Under the lower per capita assumptions not more than 2,500 acres would be needed at present yields. If the average yields are increased by 20 percent the present acreage will be sufficient to meet the lower per capita requirements.

The results of the study suggest that until there is a large increase in population, any public agencies in position to aid in the development of new cropland in Central Alaska should concentrate their activity in present settlement areas that have transportation to market. Bringing new land under cultivation is laborious and expensive. Most of the present settlers have far too little of their land cleared for efficient operation or adequate income. Satisfactory marketing conditions are dependent on volume to justify the installation of suitable facilities and transportation services, and to obtain low handling costs per unit of product. Before new areas are opened, more clearing should be encouraged on present farms that are only partially established, and on undeveloped lands in or adjoining farm communities where utilities, services, and marketing facilities are now in operation.

Any development of more cropland in Central Alaska should be related carefully to the prospective future demand for its commodities. The market is decidedly limited. None of the products of such cropland can be sold regularly in markets outside Alaska at a profit to the growers. Over-production for the local market would result in driving prices below the costs of production.

Probable permanence of the market is of prime importance. Great effort and perseverance, and considerable capital, are required to bring land into production. Prospective settlers should be encouraged to make such expenditures only to the extent that a long-time market appears to be definitely in prospect. It seems evident that the criterion for the clearing of more land should be the probable size of a permanent population, in and near Central Alaska. The estimates of such population should be based upon a realistic rate of development or use of the known natural resources, upon a conservative level of probable governmental spending in the area, and upon the probable size of the stand-by military forces to be rather permanently maintained there. Development of cropland to supply larger but short-time needs might result in the waste of both economic and human resources. Temporary increases in either military or civilian needs can be supplied from other sources, but once Alaska cropland has been developed, there is no such flexibility in the outlet for its products.

MARKETS FOR THE PRODUCTS OF ALASKA CROPLAND

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INTRODUCTION

A preliminary appraisal of the market for agricultural products grown in Alaska is set forth in this report. The publication is the result of one of several studies being conducted by Government agencies to ascertain the basis and the extent of Alaska's agricultural future. Early sections of this report describe present marketing practices and agencies. The last section discusses the characteristics and location of the market and indicates measurements of its potential size in terms of the acreages of local cropland that may be required to supply it. The extent of the future market outlets is of primary importance to both present farmers and future settlers.

Agricultural research in Alaska was recommended by the Task Force of the U. S. Department of Agriculture, which was sent there in 1946 by authorization of the Congress. The Committee on Group Settlement in Alaska, established jointly by the U. S. Department of Interior and the U. S. Department of Agriculture, also requested several studies of Alaska problems. A comprehensive agricultural research program is now under way, and detailed surveys of land capability of potential settlement areas are being made.

A report, "Some Economic Aspects of Farming in Alaska, with Chief Attention to the Matanuska Valley" 2/ has been issued, on the basis of studies made during 1948. This present report on markets and marketing problems is prepared as a companion piece. Several important physical and economic factors affecting agriculture in Alaska are discussed in the first report, and so are omitted here. The reader is urged to study both reports for a more complete understanding of the agricultural and economic problems involved.

Alaska has physical conditions of temperature and of length of growing season, of soils, rainfall, plant adaptability, and other factors, which severely limit the crops that can be grown. From the standpoint of agricultural limitations, high latitudes are somewhat similar to high altitudes, after due allowances are made for differences in length of day and in soil temperatures. The "timberline" is about 1,800 feet in elevation on the mountains surrounding the Matanuska Valley, and it is about 10,000 feet in the middle of the United States. The growing season in Central Alaska and the range of adapted crops are comparable with those

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2/ Mimms, A. L., Paschal, J. L., and Fuhriman, W. U. Some Economic Aspects of Farming in Alaska, with Chief Attention to the Matanuska Valley, (Progress Report) 89 pp., illus. Bur. Agr. Econ. and Alaska Agr. Expt. Sta. Washington, D. C. 1950 /Processed./

in the valleys of the Rocky Mountains of Colorado at elevations above 8,000 feet. Agricultural potentialities in Alaska are further restricted by such important economic factors as the comparatively high costs of production and transportation, the competition from producing areas that have lower costs, a small and sharply limited market, and allied conditions.

Recognizing the limitations within which Alaska farmers must work, this study suggests the possibilities for expansion of their agricultural production under several sets of assumed conditions. Alaska has an important place in the Nation, but its place does not appear to lie primarily in the field of agriculture. Efforts in that field apparently must be directed toward developing a rather limited number of farm products, the production of which is feasible in view of the physical and economic limitations.

CURRENT AGRICULTURAL PRODUCTION IN ALASKA 3/

Location

Agricultural activity now is found primarily around Palmer in the Matanuska Valley north of Anchorage, and around Fairbanks in the Tanana-Chena Valley, tributary to the Yukon River. The developed sections in the area around Fairbanks are smaller and less well defined than those of the Matanuska. There is some small production near Anchorage, and in scattered locations on the Kenai Peninsula. The Alaska Peninsula, Kodiak Island, and the Aleutians, have opportunities for grazing and are a potential source of meat animals and wool. Only a few cattle and sheep are ranged now in those areas.

Small family gardens are reported in all parts of Alaska. A very small acreage of vegetables has been produced in some years by the native people at Unalakleet for sale at Nome, but the volume never has been large. The Lower Yukon and the Kuskokwim River Valleys in western Alaska have no agriculture at present, although some travelers report that these areas have land and climate suitable for crops.

Southeastern Alaska, called the Panhandle, has several dairies for supplying local milk. They use mostly feed shipped in from the States. This section generally is conceded to have little land that is physically and economically adapted to agriculture, as it consists mostly of mountains and rugged terrain.

3/ For a detailed discussion of crops adapted to Alaska conditions, see United States Department of Agriculture, Agricultural Research Administration. Report on Exploratory Investigations of Agricultural Problems of Alaska. U. S. Dept. Agr. Misc. Pub. 700, 185 pp., illus. December 1949.

Adapted Products

Milk and eggs, with their byproducts of "dairy beef" and hens, are today the major animal products of Alaska cropland. Potatoes are the chief cash crop. The cool-weather vegetables grow well; the more important of these are cabbage, celery, carrots, cauliflower, and lettuce. Minor acreages are grown of beets, broccoli, green onions, radishes, turnips, fresh peas, and greens. The approximate time when potatoes and vegetables are ready for market, and the length of the marketing season (including usual storage periods), are indicated in figure 1. Small fruits and berries, such as currants, raspberries, and strawberries, are adapted to some localities, but there is little commercial production at present.

Short-season varieties of wheat, barley, and oats, can be grown in the areas now used for agriculture. Frequent rainfall and high humidity during the harvest season often cause spoilage in the shock and make storage difficult.

Adapted varieties of cultivated perennial hay and pasture plants are scarce. The purple-blossom varieties of alfalfa are not adapted in most areas; the tap roots of the plants are broken by the heaving of the ground from alternate thawing and freezing of the top layers of soil. The Siberian or yellow-blossom alfalfa has a root system that is more branched; it does survive, but has not given satisfactory yields of hay. Its production of seed also is very limited, making its propagation slow and difficult. Other introduced grasses and forages are adapted, but cultural practices need to be improved to maintain stands and to increase the yields.

Food crops that cannot be produced commercially under the temperatures, growing season, and other climatic conditions of Alaska, include beans, corn, tomatoes, dry onions, sweetpotatoes, all deciduous tree fruits, citrus, grapes, melons, peanuts and all tree nuts, soybeans, and sorghums. Of the animal products, the dairymen cannot regularly produce butter and cheese at a profit in competition with these products that are shipped in from the States or Canada. Neither is it likely that meat animals can be maintained economically on feed from Alaska cropland through the winter feeding period of 6 to 8 months. Also Central Alaska has little "grass" country, and provides limited opportunities for summer grazing. The most important native grass is the bluetop (Calamagrostis canadensis). This is nutritious for livestock during the early summer while it is immature, but it loses feeding value rapidly and steadily as it matures. 4/ The uplands of the Kenai Peninsula have a luxuriant growth of bluetop, but this area requires at least a 6-month feeding period for cattle or sheep. There have been several cattle ventures, none of which has continued. (Fig. 2.)

4/ Alaska Department of Agriculture. Livestock in Alaska including Dairy Cattle. Alaska Dept. Agr. Cir. 4, 28 pp., illus. Fairbanks, Alaska.

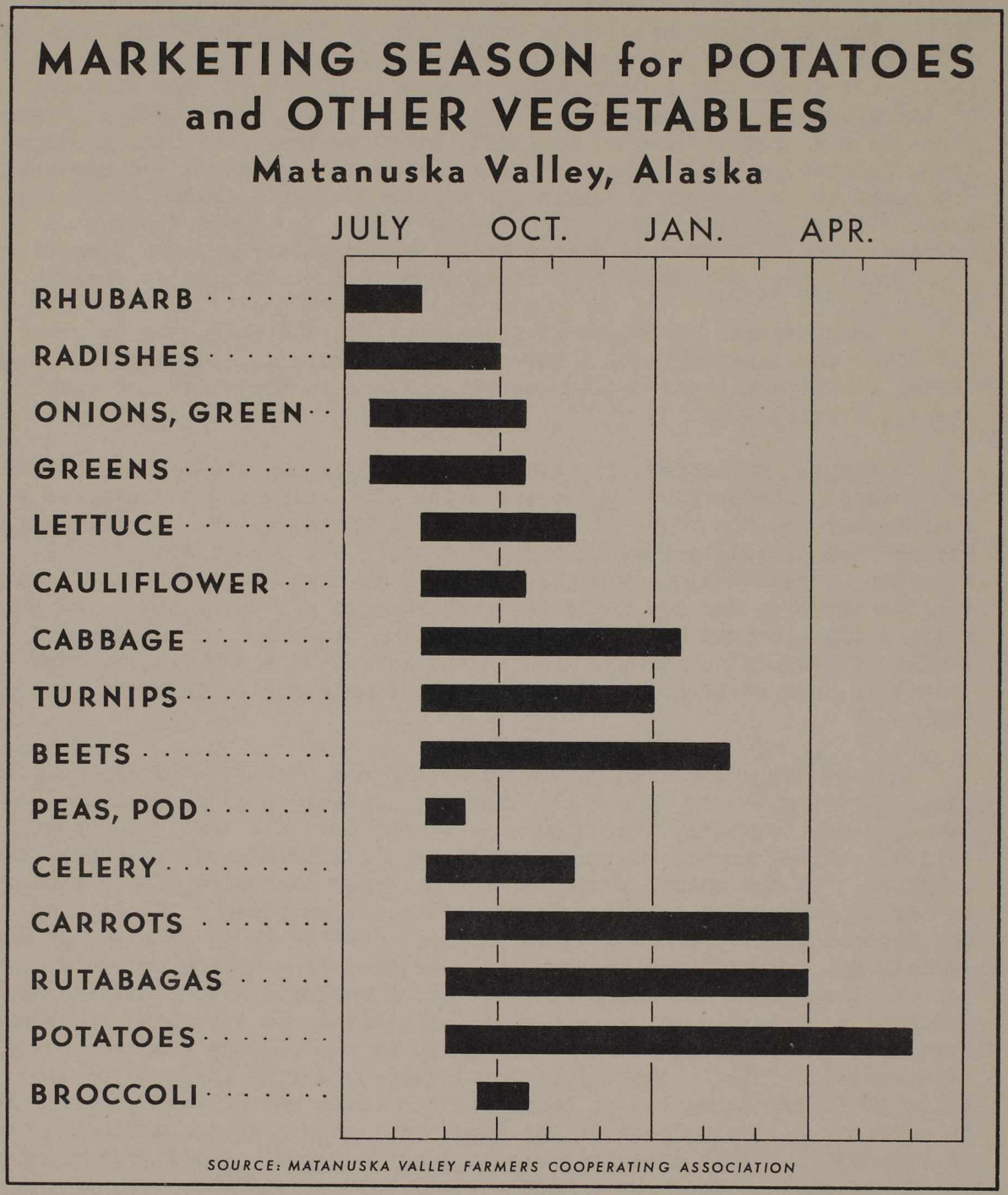

Figure 1.- The lengths of the marketing seasons vary decidedly.

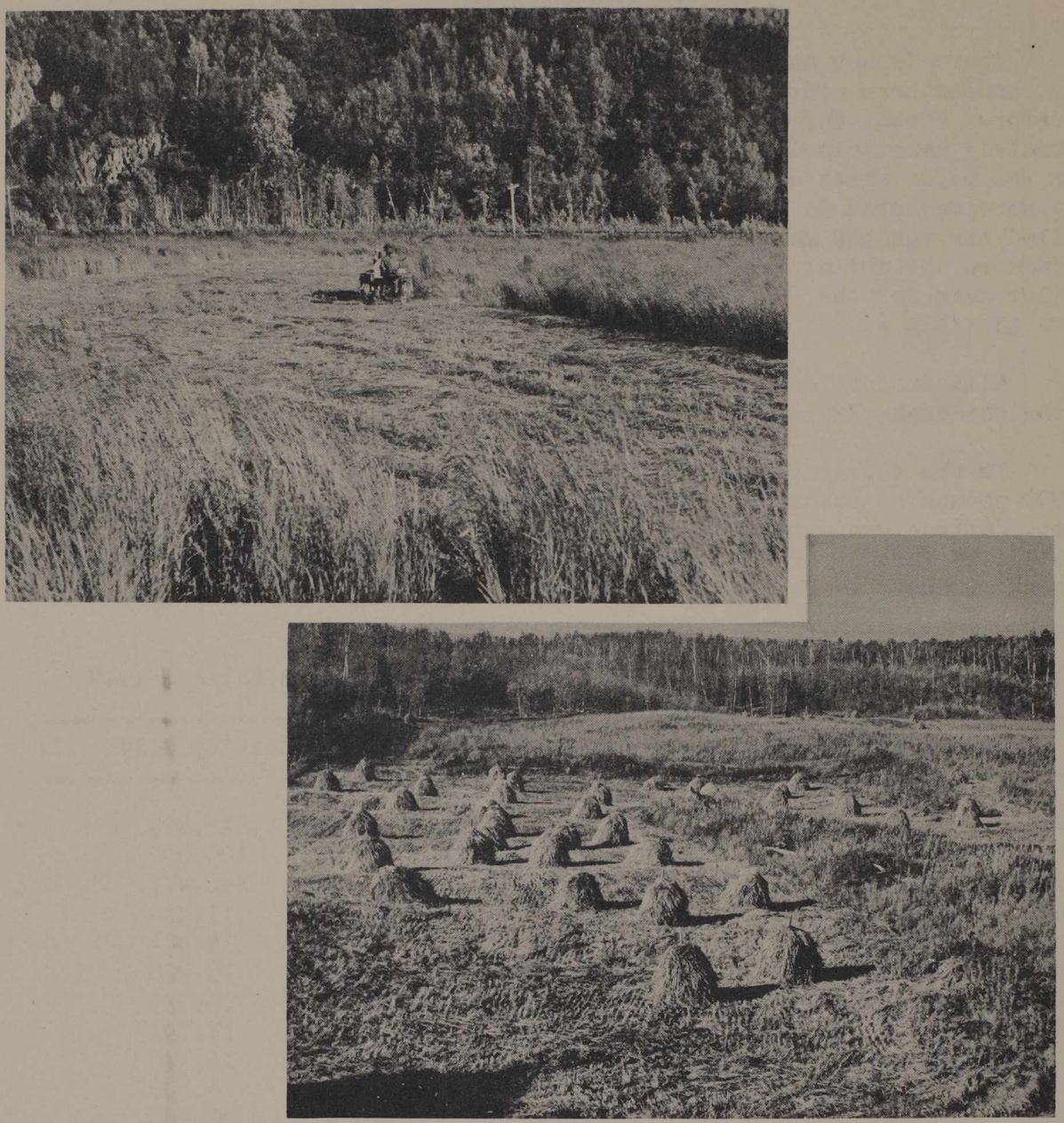

Figure 2.- Native hay sometimes makes a heavy stand. Oats are frequently grown for hay. (Photographs courtesy SCS)

Volume of Production

There is now no crop and livestock estimating service for Alaska. Many changes have occurred since the last Census of Agriculture was taken. Therefore, actual agricultural production in the Territory cannot be accurately ascertained. A rough approximation of agricultural marketings from the major areas was made for 1949 as a part of this study. Crops that were marketed in the Matanuska Valley, as estimated from the production handled through the Matanuska Valley Farmers Cooperating Association, and by farmers who are not members of that association, are shown in table 1. Similar data for the Fairbanks area, as indicated on December 1, 1949, are shown in table 2.

Milk production during 1949 was estimated at about 3,290,000 pounds in the Matanuska Valley, and about 1,000,000 pounds in the Fairbanks area.

In the Anchorage area, approximately 2,000,000 pounds of potatoes, 80,000 pounds of cabbage, and 40,000 pounds of carrots were produced that year. Lettuce was grown, but very little of it was marketed. Three specialized farms produced eggs and poultry. Approximately 320,000 pounds of pork products were produced from garbage-fed hogs.

Table 1.- Potatoes and vegetables sold from the Matanuska Valley, 1949

Commodity	Unit	Quantity sold
Potatoes	Pound	5,222,429
Cabbage	Do.	129,090
Lettuce	Do.	248,477
Greens	Do.	17,560
Turnips & rutabagas	Do.	14,424
Carrots	Do.	19,990
Carrots	Bunch	56,959
Radishes	Pound	17,791
Radishes	Bunch	16,378
Onions	Pound	4,830
Onions	Bunch	42,368
Celery	Pound	94,821
Beets	Do.	1,464
Beets	Bunch	32,250
Berries	Crate	23
Berries	Box	346
Broccoli	Pound	1,725
Cauliflower	Do.	6,904
Chard	Do.	8,096
Rhubarb	Do.	1,945

Estimated by M. D. Snodgrass for the Territorial Commissioner of Agriculture.

Table 2.- Potatoes and vegetables grown in and marketed from the Fairbanks area, 1949

Commodity	Produced	Sold to December 1
	Pounds	Pounds
Potatoes	1,200,000	1/600,000
Cabbage	80,000	80,000
Lettuce	6,000	6,000
Greens	32,000	32,000
Turnips & rutabagas	64,000	44,000
Carrots	16,000	16,000
Radishes	24,000	4,000
Onions	12,000	2,000
Celery	14,000	14,000
Beets	2,000	2,000

1/ Information in January 1950 indicated that losses in storage caused by disease and poor storing conditions had so reduced the supply of potatoes that the community could not fill its contracts.

Reported by Ed Davis, Manager of the Tanana Valley Farmers Cooperative.

Small quantities of produce were marketed from the Kenai Peninsula, from Unalakleet, and from other relatively isolated areas. No estimates of marketings from these areas are available.

Alaska will not be able to produce the variety of food crops and animal products required by civilian and military personnel in the Territory. Even of potatoes, and of the vegetables that can be grown locally, considerable quantities will have to be shipped in during the seasons when local supplies are not available. Table 3 shows the quantities of food items that were shipped into Alaska during 1946 and 1947. These were, of course, the total inshipments to the entire Territory, including the Panhandle and all ports on the mainland and the islands.

Types of Farming

Two agricultural changes have occurred in the Matanuska Valley during the last few years. One was the partial development from subsistence to commercial farming. The other was the shift from a general type of farm to specialization, mainly in dairy and truck crops. Recent rapid increase of the population at Anchorage, due primarily to increase in the military establishments and related activities, has expanded the market and encouraged the tendency toward commercial farming. Wartime demand and the high prices paid for farm products helped many farmers to "get on their feet."

Conversely, the high wages being paid for almost all kinds of work off the farms drew part-time farmers from their land. The development of some tracts that was stopped during the emergency probably is indefinitely postponed, if the owners can continue to make attractive earnings elsewhere. In other cases, a little clearing is being done as the settlers get enough money and can take time from other work.

Table 3.- Shipments from the continental United States to Alaska, 1946 and 1947

Commodity	Unit	Net Quantity	
		1946	1947
Beef - veal, fresh or frozen	Pound	5,253,188	6,262,268
Pork - fresh or frozen	Do.	1/ 1,694,564	307,377
Hams and shoulders, cured	Do.	1,093,083	1,183,966
Bacon	Do.	947,122	1,113,434
Mutton and lamb	Do.	1/ 546,262	1/ 357,928
Sausage, not canned	Do.	729,161	738,105
Canned meats	Do.	1,138,787	1,180,737
Poultry and game, fresh	Do.	1,036,638	944,583
Other meat and sausage casing	Do.	389,593	397,310
Animal fats and oils, edible	Do.	803,239	738,504
Milk, evaporated unsweetened	Do.	7,693,344	7,166,852
Butter, natural oil and spreads	Do.	1,471,847	1,500,264
Cheese	Do.	596,400	431,033
Other dairy products	Do.	1,086,651	1,163,844
Fish and fish products	Do.	539,156	598,470
Eggs in the shell	Dozen	1,833,479	1,758,785
Animals and prod. edible	Pound	1/ 206,427	76
Wheat flour	Cwt.	88,724	81,383
Biscuits and crackers	Pound	1,089,270	1,082,266
Cereal foods	Do.	590,919	598,878
Grain and preparations	Do.	1/ 2,691,144	1/ 2,931,261
Fodders and feeds	Do.	1/ 9,679,787	1/10,925,990
Potatoes, white	Do.	1/ 5,040,695	1/ 6,237,295
Other fresh vegetables	Do.	6,116,718	1/ 5,580,328
Canned vegetables and juices	Do.	5,639,181	5,918,031
Vegetables and preparations	Do.	1/ 3,444,623	1/ 2,846,883
Fresh fruits	Do.	1/ 5,819,923	1/ 5,288,690
Canned fruits	Do.	1/ 3,955,966	4,300,872
Dried fruits & preparations	Do.	1,073,593	1,353,133
Vegetable oils and edible fats	Do.	794,468	922,867

1/ Shipping weight (pounds).

Excerpt from United States Bureau of the Census. United States Trade in Domestic and Foreign Merchandise with Alaska, Puerto Rico, and Virgin Islands, Years 1946-1947. U. S. Bur. Census. Foreign Trade Rept. 800. 1946-47.

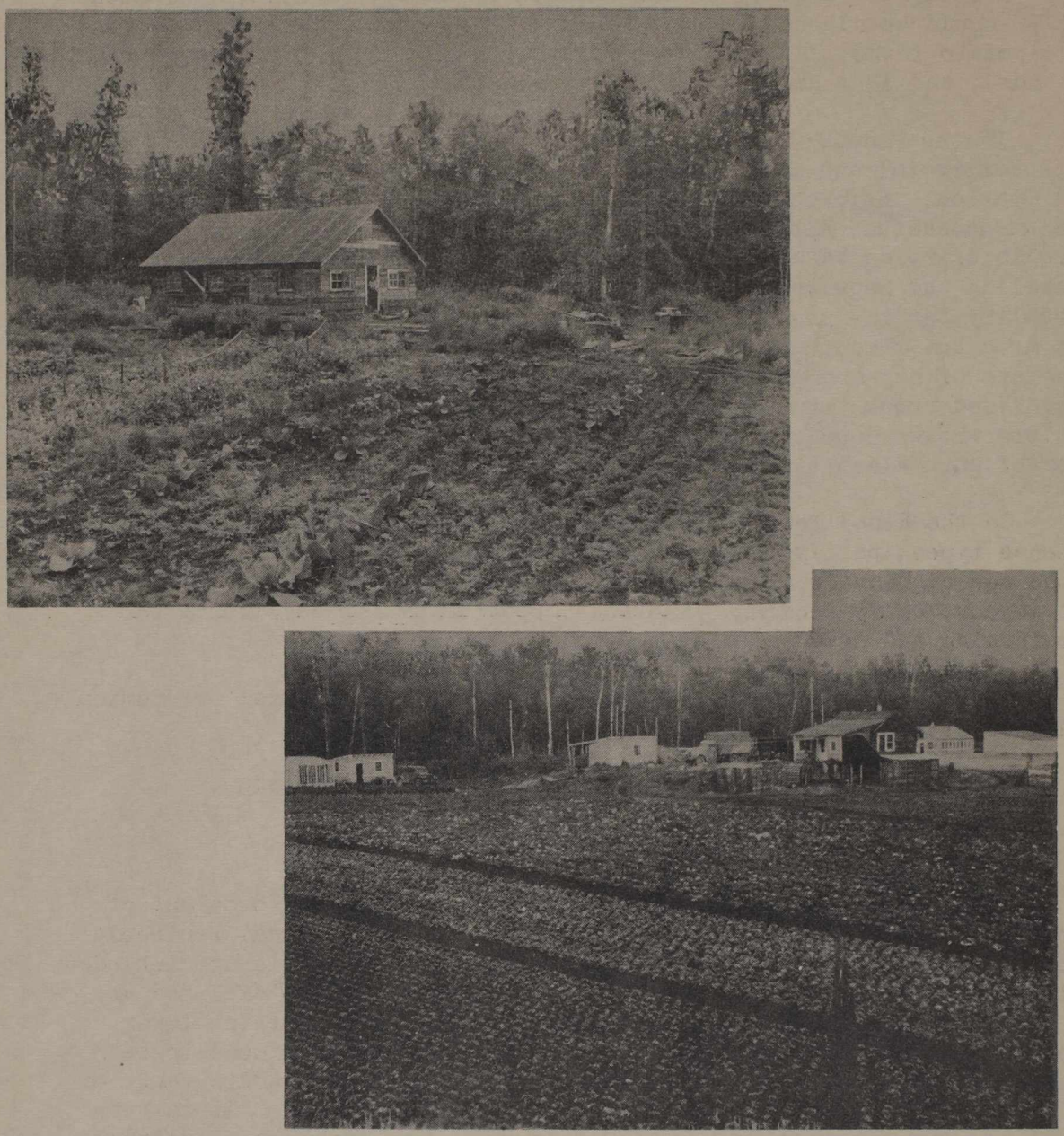

Figure 3.- New homesteaders and farmers with small acreages cleared cannot afford to use their land for hay and grain. (Lower photograph courtesy BPISAE)

A study of 78 farms in the Matanuska Valley, in 1948, indicated that 30 could be classed as dairy farms, 12 as potato farms, 12 as vegetable-potato farms, 11 as poultry farms (although only 3 had more than 300 hens), and 13 mixed farms. 5/

In the Tanana-Chena area around Fairbanks, there are only 3 dairies - 2 are commercial and the other is the dairy herd at the Agricultural Experiment Station. Efforts to organize a few farmers for dairy production have been unsuccessful, although a few individuals were making plans, in 1949, to begin dairying on a small scale. Passage of recent legislation to liberalize the requirements for public loans may encourage more farmers to qualify for the production of Territorial Grade A milk, not only in this area but throughout the Territory.6/ In the Fairbanks area the old mainstays of hay and grain production have been partially replaced by specialized truck farming, and by a very few poultry farms. Some settlers who were unable to specialize have abandoned their farms in favor of work elsewhere.

On the Kenai Peninsula, most of the current production is of subsistence types, partly because of lack of available markets. Completion of the new highway from Homer to Anchorage will provide transportation that is now mostly lacking. There is opportunity for developing part-time farming and seasonal fishing in this area.

There are no other areas of concentrated agricultural production in Alaska at present.

CURRENT MARKET FOR PRODUCTS OF ALASKA CROPLAND

Areas of Production

This report deals with the developed and potential cropland of Central Alaska, from Fairbanks and its vicinity to the Kenai Peninsula south of Anchorage. Southeastern Alaska (the Panhandle) is not included, as it has little land that is suitable for farming. Also excluded are the undeveloped areas of western Alaska, in the valleys of the Lower Yukon and the Kuskokwim Rivers. Even if these areas are found to be physically suitable, they are too remote to be within economic range of any appreciable market within the foreseeable future. The Alaska Peninsula and the neighboring islands of southwestern Alaska are excluded on the assumption that their native grasslands will be used for livestock grazing, and will not be broken up for cropland.

This report is confined to cropland - that is, to land which is cleared and prepared for cultivated crops, meadow or pasture, or land that is to be cleared and prepared.

5/ See footnote 2, p. 5.

6/ Pub. Law 361, 81st Congress. An act to enable the Secretary of Agriculture to extend financial assistance to homestead entrymen. (63 Stat. 883)

Location of the Market

The market for the agricultural products of Central Alsaka is the population residing on the mainland of Alaska, excluding the southeastern Panhandle. From the standpoint of transportation, the cities and towns of the Panhandle are closer to Seattle than to the agricultural areas of Central Alaska. All of their supplies, except milk from a few small local dairies, are now shipped in from the States or from Canada. To date, agricultural commodities have not been shipped out of Central Alaska, with very limited and minor exceptions; and southbound rail-and-boat rates have not been established to points intermediate between Seward and Seattle. If such shipments were made under present tariffs, the through-rate to Seattle would apply. Therefore, transportation costs to Panhandle cities, comparable to the rates from Seattle, cannot be calculated.

Dairy and poultry products from the interior of Alaska could not compete in Panhandle markets with similar products from the States, because of their higher costs of production. The only possibilities for shipment from the interior might be potatoes and vegetables. Even though favorable freight rates on these commodities might be established, their marketing opportunities in the cities of the Panhandle would be limited because established supply lines from the States bring in all other commodities. It would not be likely that local merchants would change their source of supply, particularly on the short-season vegetables, unless they were offered material inducements in price.

Wool has been shipped out in limited quantity from islands off the southwest coast of Alaska. Sheep and cattle raising and wool production probably will increase there, if the coastal plains and beaches are reserved as winter grazing areas. There is no likelihood, however, that wool will become an export item from feed produced on cropland of the interior.

All the products that can be grown on Alaska cropland - early maturing grains, hay, silage, potatoes, and cool-weather vegetables - are produced also in all other agricultural areas of the temperate and sub-Arctic zones. So are the animal products into which they may be converted. Opinion is general that no produce of this cropland can be shipped profitably to the States, to Canada, or to foreign countries, in competition with these same items that are produced elsewhere.

Size and Characteristics of Present Market

In 1948, the total resident population of Alaska was estimated at approximately 95,000, exclusive of the Armed Forces and of the summer influx of transient workers and visitors.7/ Nearly 30,000 of this permanent population were residents of the First Judicial Division, which comprises the Panhandle. The native population was estimated at about 25,000 mostly located on the mainland. The remainder, approximately 40,000 represented the present total white civilian resident population of the entire mainland of Alaska. A considerable number of these were widely scattered in the relatively inaccessible parts of the Territory, where they could then and now obtain almost none of the farm products of Central Alaska.

7/ Alaska Development Board. Estimated Civilian Population of Alaska in Years Since Last Official Census in 1939. 1948. /Processed./

The estimated resident population in 1948 of the principal Alaska communities was as follows:

Estimated resident population of Alaska, by communities, 1948

Community	Population
	Number
Principal	
Panhandle	
Juneau	7,000
Ketchikan	7,000
Sitka	2,000
Petersburg	1,500
Wrangell	1,200
Skagway	650
Douglas	525
Craig	500
Haines	400
Total	20,775
Central	
Anchorage	19,000
Fairbanks	8,500
Palmer	1,500
Seward	1,000
Valdez	600
Seldovia	400
Homer	325
Nenana	250
Total	31,575
Other	
Nome	1,600
Cordova	1,500
Kodiak	1,200
Unalaska	600
Total	4,900
Total	57,250
Smaller communities in all Alaska 1/	37,750
Estimated total Alaska	95,000

1/ Remainder of the population, in smaller communities, on farms and homesteads, in native villages and scattered in Alaska.

Alaska Development Board. Trade and Industry now in Alaska. 55 pp., illus. Juneau, Alaska. 1949.

According to these estimates, only 60 percent of the population lived in communities of more than 250 or 300 inhabitants. Relatively few of the 25,000 natives lived in these communities. The total farm population has been estimated at about 650 families, or perhaps 2,500 to 3,000 persons. This indicates that, in addition to the native population and the farm families, some 10,000 of the white civilian residents of Alaska are located in the scattered communities that have less than 250 inhabitants each. Many of these communities cannot be regularly or economically supplied with fresh milk and vegetables from the cropland of Central Alaska in the foreseeable future; therefore they will not be a fully effective part of the market for such products.

The populations residing on the mainland are divided into the following groups for consideration of their use of Alaska cropland products: white civilian residents, native people, seasonal workers and short-time visitors, and military personnel.

White civilian residents comprise most of the present market. They number about 40,000 people - including the farm families themselves. In terms of populations in the States, this market is approximately equivalent to supplying Danville, Va., or Cumberland, Md., with the list of such seasonal farm products as can be produced in Central Alaska.

The estimated rates of consumption by the white civilian residents are based on average per capita consumption in the United States, with some modifications that are discussed in following sections. These data are listed in later tabulations of present and potential future consumption of the products of Alaska cropland.

Most of the native population of Eskimos, Aleuts, and Indians, are widely scattered throughout the Territory. Their food habits differ greatly from those of the whites. Native people living near the agricultural areas use small quantities of the farm products, but those who live in scattered and remote villages use practically none. The nutritionist of the Alaska Territorial Department of Health says:

> "The Eskimo economy is still one of hunting and fishing. Money is available in only small amounts and then only seasonally. Therefore, for the majority of Eskimo natives only limited amounts and kinds of food are available by purchase; most of them must still get the bulk of their foods from the sea, the rivers, and the tundra. A wise use of native foods throughout the year is the only practicable solution to existing dietary shortages. This means a sound nutrition education program in the schools and through field health services to help the native understand his food needs in relation to his physical well-being." 8/

8/ Heller, Christine A. Alaska Nutrition Survey Report, Alaska Dept. Health, Juneau. 1947. p. 80. [Processed.]

In total consumption of the products of the cropland of Central Alaska, the quantities used by the native people are more than offset in lack of use by white residents located in distant parts of the Territory where such products cannot be obtained.

Seasonal workers and short-time visitors who come for the brief summer season make an additional civilian market for local products. The Unemployment Compensation Commission of Alaska estimates that between 15,000 and 20,000 migratory workers come to the Territory each year, but a relatively small part of these reach the interior of Central Alaska.

The largest single group is employed in fishing and in the fish canneries. This employment is mostly in isolated places, along the coast and on the islands from the southern end of the Panhandle to Bristol Bay beyond the Alaska Peninsula. The fishing season starts in late June or early July and ends in August. Nearly all of the food for these workers is shipped in from the States, along with all the other supplies for canneries. The season ends about the time that Alaska vegetables and small fruits become available. Because of these factors, the fishing fleets and canneries at present offer no appreciable market for the products of Alaska cropland.

A second group of summer workers, relatively small in numbers, are employed in gold dredging and other mining. For the most part the location of this employment also is far removed from the areas of agricultural production, and the food comes in processed form - canned, preserved, or dried - from the States. These workers also offer little outlet for the farm products of Central Alaska.

Other summer workers are engaged in the construction of buildings and highways, in the service industries, and in other employment, in the Panhandle and in the Interior. Those who are located in or near the agricultural areas of Central Alaska represent a market for local farm products comparable in size to a similar number of residents during the same season. They arrive in late May or June, and most of them are gone by the end of September. On the average they stay about 3 months.

A considerable number of tourists and business representatives visit Alaska each year, mostly during the summer. Probably more than half of these go no farther north than the Panhandle. Those who visit Central Alaska may stay, on the average, about 2 weeks each, so that six of these short-time visitors provide in 3 months a market for local foods equivalent to one seasonal worker.

Data are not available on the annual numbers who visit or are temporarily employed in the mainland of Alaska. In proportion to the estimated totals for the entire Territory, it is probable that the number so located as to have access to the agricultural products of Central Alaska represents the equivalent of not more than 8,000 persons for one-fourth of each year. During part of that period they consume the local summer vegetables, but they are in Alaska mostly "between seasons" so far as locally grown potatoes are concerned. They are consumers of fresh

milk and ice cream; but they will not increase the number of dairy cows required, for they will be supplied by the natural summer flush production of milk from the same cows that will be needed to supply the permanent population during the remainder of the year. In this respect the dairymen in Alaska are fortunate - the period of greatest demand coincides with their heaviest production, and so reduces the volume of seasonal surpluses which plague many dairy areas.

For every 1,000 seasonal-worker-and-summer-visitor "units" of 3 months each, the land-use requirements for locally grown potatoes, vegetables, and berries, in season, are estimated at not more than 7 acres. If the total of these "units" for a season were 8,000, such land use would be around 50 acres of cropland.

The Armed Forces as a Market for Local Farm Products

The Armed Forces constitute the largest single buyer of potatoes and vegetables in Alaska, but no official figures are available on the numbers of military personnel to be supplied.

Contracts to supply locally grown commodities to the Armed Forces are highly desired by the producers, and by their marketing organizations. A larger proportion of such products in season can be used than in the past, but there are problems within both the procurement and the producer groups that must be solved before the Armed Forces will be using the maximum of locally produced goods.

Trade relations between the local produce contractors and the buyers have not been entirely satisfactory in the past. Fortunately, some major representatives of farmers recently have made greater efforts to sell produce that meets the contractors' specifications. Certain administrative policy changes by the Armed Forces relative to the purchases of local products also are improving the relations. The special procurement problems of the Armed Forces are presented here in considerable detail because this segment of the market is so important to the future of agriculture in Alaska.

The Quartermaster Corps of the Army currently buys the supplies for the bases at Fort Richardson near Anchorage, at Whittier and Big Delta, and at Eielson and Ladd Fields near Fairbanks. Purchases of Alaskan-grown produce result from bids submitted by local contractors on invitation. The contracts for these purchases can vary widely depending upon conditions. Thus a contract may cover the needs of several military posts throughout a season; separate bids may be made, however, for portions of the contract, each to supply only a part of the posts, or to supply one or more during only a specified period during the season. Variation of 50 percent above or below anticipated requirements is allowed in the contracts to compensate for changes in needs.

Specifications.- All produce contracts offered in Alaska specify that the items which are designated "must be produced in Alaska," must be of U. S. No. 1 grade or its equivalent, and must be delivered at specified

times and locations. Present representatives of the Quartermaster Corps are sure that farmers in Alaska can grow potatoes and vegetables that will meet the required standards for quality.

Grading.- Grading of these products remains a perpetual problem. It will continue so until a system of Federal-Territorial grading by licensed inspectors is established. Tentative arrangements between the Territorial Department of Agriculture and the Armed Forces for grading during the 1949 marketing season failed to materialize. Many farmers and the officials of the Quartermaster Corps have indicated their active interest in such a program as soon as it can be effectuated. One of the difficulties in its development is the relatively small quantity of produce that can be assembled at individual points. Further cropland development in the present farming areas, with resulting increases in production, would help in the establishment of more effective and more efficient methods of assembly, storage, preparation and grading, inspection, and deliveries to the markets.

Even if licensed graders were available, the Quartermaster Corps would still make limited inspections, but they would be of a limited nature to assure that the grade was being maintained in the deliveries, and to check on the fulfillment of the contracts.

Procurement and Delivery Schedules.- Feeding several thousand men three meals a day requires detailed planning. Transporting the required food for long distances increases the problem. Generally, food procurement is conducted on a 60-day order and shipping margin from central-supply headquarters. This margin can be cut to a minimum of 30 days in emergencies. No shorter time can be allowed because about 3 weeks are needed for the transportation alone, if products are shipped in from the States.

The importance of the time element in procurement often is not realized by local suppliers. Frequently, no notice is given by certain suppliers when they know that commitments they have made cannot be fulfilled.

Efforts are made to work out station requirements for local food with producer representatives well in advance of the dates for planting. This allows time for farmers to decide on their plantings in anticipation of an assured market. The percentage of contracts that were entirely fulfilled by Alaskan produce contractors is reported to have been low, according to records of the Quartermaster Corps. This experience is naturally discouraging to the Corps.

Local contractors also have their problems in dealing with farm producers; and the farmers have their problems in dealing with labor, weather, insects, and other problems which make it difficult to mature uniform crops or to mature them on specific dates. Most farmers are conscientious about their contractual responsibilities but some are less responsible. These are the ones who deliver low-quality produce to the contractor, bring it in late, default on their agreements if offered more money elsewhere for their products, and who generally upset the delivery schedules.

Seasonal Deliveries.- The Quartermaster Corps works out a schedule of deliveries in conference with representatives of producers. It will make contracts covering any periods when Alaskan produce will be available. Contract amendments can be made to cover short-time periods before and after the major marketing season. In addition, small shipments of special items are often taken on purchase orders.

There is great need for liaison work in the field of market reporting. Such work would involve the publication of indicated demand for various items of local production before planting time, and follow-up summaries during the planting and growing seasons. These follow-up statements would report on acreages actually planted, crop conditions, probable yields, indicated quality, and similar data needed for planned marketing operations.

If the procurement officers are kept advised of changes in the indicated harvesting dates, they can adjust schedules of purchases to meet the local conditions. This might involve purchases beginning earlier in the season and continuing after the indicated close of the season. Conversely, it might involve inability by the contractor to meet commitments because of lateness of maturity, failure of crop, or other hazards of production. A notice of at least 30 days is needed if deliveries cannot be made, to permit the procurement officers to arrange for and get delivery of replacement supplies from the States.

Price.- No clearly defined policy as to military procurement practices and prices is apparent. Regulations state: "Oversea commands will requisition on Zone of Interior Ports, only after maximum utilization of local indigenous sources of supply has been effected." 9/ This constitutes the authority for buying in Alaska. The policy as to prices to be paid for local products is left to the discretion of the Commanding General of the Theater; he is required to buy in the best interest of the Government. Major criticisms among contractors and farmers of the contracts made with the Army have arisen from changes in policy which, to the farmers, seemed to occur without cause or reason.

The policy in wartime in the Alaska Theater of Operations definitely was not favorable to the purchase of Alaska-grown products.

Present policy appears to be fairly liberal. A contract is awarded if the bid is reasonably close to the costs of items from the States delivered in Alaska. Contracts are awarded to low bidders. However, if the local bid price is materially higher than the delivered cost of items from the States, of the same kind, no local award is made. Any expectation that the Armed Forces will buy Alaska products through noncompetitive pricing is probably unrealistic.

9/ United States Department of the Army, Special Regulations 210-50-1, par. 4, Overseas Supply Aid.

Contracts usually are awarded in the spring at a time when prices in the States generally are high. This is an advantage to Alaska growers. Prices would be lower seasonally if contracts were made on a monthly basis over the delivery season.

Volume Requirements of Items Alaska Can Produce.- The master menu used by QMC in Alaska provides the servicemen with approximately 50 percent more calories than are provided by the rations used in the States or in warmer climates. Menus must be prepared in advance and the supplies must be on hand when needed. Local fresh products are utilized whenever possible. These are supplemented with processed items if necessary.

Monthly requirements, per 100 military personnel, of food items Alaska can produce

Item	Quantity
	Quarts
Milk, fresh	750
	Pounds
Beets	28
Broccoli	1/ 50
Cabbage	140
Cauliflower	1/ 50
Celery	286
Carrots	130
Greens	2/ 78
Onions, green	3/ 22.5
Peas, pod	3/ 80
Lettuce	325
Radishes	3/ 19
Turnips	37
Potatoes	2,237

1/ Not on menu, substituted for other items.
2/ Includes mustard greens, spinach, Swiss chard.
3/ Served only in season as extra menu items.

Interpretation of these requirements in terms of land use in Alaska is made in the detailed discussion on future markets, beginning on page 36 .

Record on Contract Fulfillments.- When local fresh supplies are not available, items like celery and lettuce are shipped in as fresh items. Beets, carrots, peas, and so forth, are shipped in cans. Items like green onions and radishes are not used unless they are available locally.

The delivery record on contracts by local suppliers has not been satisfactory to the Quartermaster Corps. In the marketing season of 1948-49 it ranged from 12 percent on onions to 89 percent on lettuce (table 4). On all vegetables, only 62 percent of the contracted tonnage was delivered. Approximately 8,000,000 pounds of potatoes were contracted, but only 75 percent of the total was delivered.

Table 4.- Volume of specified vegetables contracted by local contractors with the Armed Forces and volume delivered, Alaska, marketing season beginning 1948

Item	Volume		Percentage delivered on contract
	Contracted	Delivered	
	Pounds	Pounds	Percent
Beets, w/o tops	37,492	6,697	18
Broccoli	24,666	6,717	27
Cabbage	132,472	103,716	78
Cauliflower	14,054	6,614	47
Carrots	45,298	25,669	57
Celery	56,751	31,309	55
Greens	22,026	8,974	41
Onions, green	10,404	1,279	12
Peas, pod	11,408	6,668	58
Lettuce	89,033	79,544	89
Radishes, bunch	34,263	17,288	50
Turnips	6,643	5,639	85

Data supplied by the Quartermaster Corps, Fort Richardson, Alaska.

Estimated needs for 1949-50 are indicated in table 5. Preliminary observation, in November 1949, indicated that the record of delivery of contracted volumes was better in some cases and poorer in others; the final result probably will prove to have been little better than in 1948-49.

On the basis of the experience in 1948-49, it appears that farmers in Alaska could have sold about one-third more potatoes, and many more vegetables, than they did in that year. In addition to the contracts that were only partially filled, others were offered but not bid upon by contractors because produce was not available. Bids were not solicited on milk and eggs because the local supply was totally inadequate for contract delivery. All milk for military use was shipped in, fresh or frozen, or in various processed forms.

Table 5.- Volume of specified vegetables contracted by the Armed Forces, Alaska, marketing season beginning 1949 1/

Product	Period	Volume contracted
		Pounds
Beets	Aug.-Sept.	11,304
Broccoli	Aug.-Sept.	20,330
Cabbage	Aug.-Oct.	85,386
Carrots	Sept.-Oct.	52,858
Cauliflower	Aug.-Sept.	20,330
Celery	Sept.-Oct.	116,196
Greens	Aug.-Sept.	31,714
Lettuce	Aug.-Oct.	198,219
Onions	Aug.-Sept.	9,128
Peas	Aug.-Sept.	32,528
Radishes	Aug.-Oct.	11,586
Turnips	Aug.-Sept.	15,044
Potatoes	9 months	4,800,000

1/ Summarized from invitations to bid for season 1949.

Supplies for Nonmilitary Commissaries, Contractors, and Post Exchanges

The preceding data apply to the feeding of military personnel only. Other agencies make contracts for items to be sold through commissaries and post exchanges, and for the contractors who feed the workers on military construction or other jobs. Contractors similar to the Universal Food Service which, in 1949, was feeding 900 construction workers at Ladd Field, apparently provide food in about the same quantities per capita as do the Armed Forces. The Quartermaster Corps indicates that all of the food supplies for military dependents, contractors, and so on, total about 50 percent of the requirements for the Army messes. In the population groups considered on preceding pages of this report, the dependents of military personnel, and the workers employed on construction and maintenance of military projects, are included as civilian residents or as seasonal workers. Their use of local foods is included in the estimates of consumption by such groups.

Consumer Reactions to Major Items of Alaska Production

Consumers in Alaska are from widely divergent food environments. They brought established food habits - their likes and dislikes - with them. In many cases, the housewife appears to be hypercritical of Alaska products simply because she has not learned how to prepare the local foods. But the housewife and her methods of food preparation are only part of the problem.

The market quality of items sold by many of the farmers unfortunately has been low. Quality has remained low even though, in many instances, a farmer has had his product refused repeatedly and has been shown what quality is necessary to meet the grade demanded by the market.

For example, in 1935, an investigator reported as follows:

> "I gathered from the merchants in Anchorage that their trade discriminates against potatoes grown in the Matanuska Valley. The objection is said to be based on the fact that the tubers grown are soggy and often hollow, and on the fact that dirty and ungraded stock has been sent to markets. Investigation indicates that good table stock can be produced but care must be exercised in selection of the site and the seed.
>
> Little or nothing apparently has been done to overcome the early prejudice against potatoes grown in the valley.
>
> I saw and ate some very good home-grown potatoes." 10/

10/ Goodman, A. M. Report of Present and Estimate of Future Agriculture of the Matanuska Valley of Alaska. 1935. [Unpublished]

The same objections to much of the potato production in Alaska were still being made by the consumers in 1949 - 14 years later. Much of the difficulty arises because some farmers do not try, or do not know how, to grow good potatoes; part arises from the lack of proper grading and inspection. Alaska produce can be as good as competing products from the States, but often it has not been. In the past, locally grown foodstuffs frequently have been in short supply, and the relatively few farmers then established were unable to fill the local needs. Consequently, many made little effort to improve the quality of their produce. Merchants and dealers now are beginning to refuse inferior products.

Inspection and grading of local products by licensed inspectors in present and in any future settlement areas is a prime requisite if the market for the local items is to be expanded, or even maintained at its present level.

Improvement of air and boat transport service, and the development and improvement of cold storage will reduce the differences in prices between local and imported produce, and will improve the quality of the shipped-in goods. This will force improvement in the quality of the Alaska - grown commodities, and will force down the comparative prices for them, if local producers are to meet competition. The Alaska Experiment Station is striving to develop new strains and varieties of potatoes and vegetables that will yield better market quality. Extension education is needed among farmers in correct cultural, harvesting, storage, and marketing practices.

Civilian consumers in the Anchorage-Matanuska Valley area appear to have a more favorable attitude toward local products than do the consumers in the Fairbanks area. Much of this difference stems from the efforts of the Matanuska Valley Farmers Cooperating Association, at Palmer, together with the sterling reputation for satisfactory products of several commercial truck farmers in this Valley. A few farmers in the Fairbanks area have similar reputations, but a smaller proportion of all the local supplies grown there is marketed under desirable conditions of quality.

Local eggs meet varied acceptance. Except for an occasional comment relative to a slight "off" flavor, most criticisms centered around the high prices being charged for the very short supply of local fresh eggs, and the irregularity of the supply.

Eggs shipped in by air were considered generally satisfactory in quality, but their prices were nearly as high as those for local eggs. Eggs shipped in by boat usually were of lower quality than either the local or the airborne, because of the relatively long period in transit. Some eggs were trucked in from Canada over the Alaska Highway. These were rather expensive, and of variable quality.

A typical egg-price structure for Anchorage in July 1949 was:

Local (Matanuska) eggs	$1.45 per dozen
Airborne eggs	1.30 per dozen
Trucked-in eggs	1.20 per dozen
Boat-shipped eggs	.85 per dozen

Milk that is produced locally meets varied acceptance, according to price, quality, convenience, availability, and other considerations. In Anchorage, most of the fresh milk is supplied from the Matanuska Valley Farmers Cooperating Association at Palmer. 11/ As local production is insufficient to meet the demand for fresh milk, varying quantities of airborne and frozen milk are shipped in to make up the difference. In a sample of four leading food stores in Anchorage, in July 1949, it was evident that in those stores evaporated (canned) milk comprised about 65 percent of the sales, in terms of fresh-milk equivalent; local fresh milk comprised about 30 percent; less than 3 percent was of frozen milk (shipped in paper cartons by boat from Seattle); powdered-milk-equivalent comprised less than 2 percent; and airborne less than 1 percent. (The airborne had been temporarily discontinued because of the flush production of local milk at that season; the proportion of airborne has been much larger, relative to local, during other seasons of the year.) The most significant of these figures, of course, is that two-thirds of the total equivalent was of the so-called old-reliable canned milk, even during the summer, because of its lower price and the convenience in holding and using it.

Prices were as follows: 40 cents a quart (plus 15-cent deposit on bottles) for local milk, 45 cents for a quart of frozen milk in paper cartons brought in by boat under deep-freeze refrigeration, and 55 cents for airborne milk also in paper cartons for which the air-freight from Seattle was about 30 cents a quart. Evaporated milk was 17 or 18 cents per can of 13 fluid ounces.

A sample of consumers in the Anchorage area, in the summer of 1949, indicated a decided preference for local milk. Next preferred was airborne milk, followed by evaporated. No comment was made by these consumers concerning the quality of local milk. Nearly 75 percent of the interviewed housewives indicated that they would buy more local fresh milk if it were available, and if the price were slightly lower, but information was not obtained on the additional quantities housewives thought they would take at various lower prices.12/ The local distributor of milk from the Matanuska Valley Farmers Cooperating Association

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11/ Another firm sells reconstituted milk and reconstituted chocolate milk, based on use of fresh airborne cream, nonfat milk solids, and water. It was beginning to sell local fresh milk from the Matanuska Valley in the fall of 1949.

12/ A price 10 percent lower than the current price was used as the basis for the question.

estimated that the present annual average volume of about 4,200 quarts of milk per day was only about two-thirds of the quantity of fresh whole milk he could have sold in the civilian market if supplies had been regularly available. Consumer demand in the Anchorage area is not completely filled even at current prices. Production problems, centering around high costs of production and seasonal variations in supply, limit the volume that is marketed even at the current high prices.

Results of a survey in Fairbanks were decidedly different. Two privately owned dairies were providing the fresh milk. One apparently was doing an acceptable job since few of the customers made complaints. Much criticism was directed at the quality of milk being sold by the other. Many housewives in Fairbanks said they were afraid that local milk was unsafe for their children. Under this situation the demand for local milk in Fairbanks is sharply limited. Unfortunately, many of the housewives project their attitudes toward milk into a fear or distrust of all Alaska products, and tend to romanticize about products from the States. They apparently do not try to learn the true facts of the situation.

In Valdez, it was found that fresh milk and potatoes brought from producing centers in Alaska were no cheaper than those arriving by boat from the States. The quality of Alaska potatoes was reported to be often poorer. Fresh eggs were practically unavailable in Valdez, but the quality of boat-shipped eggs was considered reasonably satisfactory by the consumers.

Adjustments and Improvements Needed

The market situation in Alaska in 1949 had several features that may become of serious concern to local farm production. First, farmers of course have no monopoly in supplying foodstuffs for local consumption. Retailers generally could order their potatoes, vegetables, and milk, from the wholesale sources in the States which furnish all the remainder of the goods carried by these stores. In many cases it would be more convenient, and no less profitable, for retailers to do this. Second, retailers have found that they must carry outside produce along with the Alaska-grown, if they are to satisfy some of their customers. Third, specialized production has been increasing rapidly, and some of the minor vegetable items have been produced in quantities exceeding the demand in the markets to which they could be supplied. From this position it is only a step to a similar over-production of the more important vegetables.

Some of the problems arise from the kinds of seed some farmers now plant, and from undesirable practices too generally followed in growing and harvesting the crops to be marketed. These problems require continuing and expanding research by the Experiment Station and other agencies.

Other problems arise from harvesting practices, packing methods, and storage conditions. Some farmers are well versed in good procedures. Many others need specialized guidance in ways to prepare their produce for the best acceptance. Further research can be of great assistance. Also an extension marketing specialist is badly needed in this work; his activities should be synchronized with those of private and cooperative marketing agencies.

A system of standards composed of uniform grades that are acceptable to the trade should be developed and enforced. The Territorial Commissioner of Agriculture prepared a preliminary set of market grades for vegetables in the summer of 1949. The investigators believe that these should be developed and effectuated. Adequate numbers of licensed graders and inspectors should be employed, probably on a farmer-paid fee basis, to assure that produce on the market is properly graded and labeled.

Home demonstration workers are needed to show housewives the best methods of home storage and preparation of Alaska products. Research in the nutritive values of these products is necessary if rumors that local products lack necessary food values are to be counteracted, but such research is strikingly lacking. If these rumors should prove to be accurate, it might be possible to improve the nutritive values of Alaskan produce through better selection of varieties, through improved cultural practices and methods of storage, and through other means.

Presumably all of these efforts would be focused upon the over-all problems of gaining a better trade and consumer acceptance of locally grown products.

PRESENT MARKETING FACILITIES

Distribution of Farm Products

The Matanuska Valley Farmers Cooperating Association at Palmer is the most important single channel through which farm products of that area are sold. This association buys milk, eggs, potatoes, vegetables, and meat from the farmers, and sells mostly in Anchorage or to the military establishments. A few specialized vegetable growers in the Valley prefer to sell their own produce to regular customers, believing they get a better price than they would through the cooperative.

A group of local producers at Anchorage deals in potatoes and vegetables. In Anchorage and Fairbanks, such specialties as tomatoes and cucumbers are sold from a few small greenhouses, and many truck patches yield small quantities of garden produce in season, some of which is sold by the growers to local retail stores.

The two commercial dairies at Fairbanks produce and distribute fresh fluid milk. One of these handles the milk from the Agricultural Experiment Station, in addition to that from its own cows. During the

summer of 1949, the Army was buying no local milk in Fairbanks. Potatoes and limited quantities of other crops were handled by the Tanana Valley Farmers Association, Inc., which served about a dozen growers. Other farmers preferred to do their own grading and marketing. One farmer, located several miles from Fairbanks, is constructing a combination abattoir and cold-storage-locker plant, where he hopes to process and store local meats, wild game, berries, fruits, and vegetables. This plant had not begun operation when this report was finished.

In outlying districts and the smaller villages there are no specialized marketing facilities. In many cases, surpluses for sale must be packed on back or be transported by small boat to a local store, to be traded.

Farmers' Cooperation in Marketing.- Cooperatives in Alaska have had a difficult time. There appear to have been three major reasons for this which were mostly within the internal organization of the co-ops. These have been an inadequate understanding of, or belief in, the principles of cooperation by the members, inadequate or poorly advised management and operating policies, and inadequate capital.

Discussions with farmers, produce dealers, retailers, and consumers, in the summer of 1949, definitely indicated what others have discovered elsewhere, that just selling through a cooperative is not enough. A cooperative organization must be able to meet competition from local and outside sources in regard to volume, quality, and price. Present management appears to recognize the marketing problems faced by the co-ops. The members have yet to recognize fully the limitations as to what a cooperative can do for them and have yet to do their share of adjusting.

As an economy measure the cooperatives are allowing farmers to do most of the grading of their own produce. Uniformity of product is virtually impossible under that system. The only feasible solution appears to be the carrying through of an educational program by the cooperative together with the Extension Service, establishing a set of grades and licensed Federal-Territorial grading and inspection at the packing shed.

Transportation

Alaska has impressive areas of unsettled country. Its average population density is less than two persons per square mile, although most of the inhabitants are more thickly settled than that and are found in a few relatively small districts. Its isolation, much publicized in literature, is a formidable barrier to trade of all kinds. Anchorage is 1,450 miles airline from Seattle, and Fairbanks is 270 air miles farther. Nome is about 520 air miles northwest of Anchorage. Few realize that Ketchikan is as far from Point Barrow as Seattle is from the Mexican border.

Boats take 5 or 6 days to go from Seattle to Seward. Another day is required to get to Anchorage by train from Seward, and still another full day by train or automobile to Fairbanks. Beyond Fairbanks there are no railroads, few roads, and few streams open for travel during much of the year.

Agriculture in Alaska has been developed behind a protective barrier of high freight rates from the States, and of inadequate transport service. These have been instrumental in maintaining high prices for local products. Production costs also are high, because shipped-in items that are used in production are higher priced than they are in the agricultural areas of the States.

Cheaper transportation, both to and within the Territory, would be an advantage to most segments of the population, and to most enterprises. It is a difficult problem to solve, because of the small tonnages and one-way hauls during much of the year. For agricultural producers, the transportation rates from outside points work in opposite ways, in that they increase the costs of production goods that must be shipped in, but they make it possible to keep the prices of local agricultural products relatively high. The ceiling of the market for products of Alaska cropland is not established by local supply and demand, but is Seattle-plus-transportation, plus or minus any normal price differentials that prevail between the local and shipped-in commodities. Thus the top price for local eggs or fluid milk is geared to the prices in the States or in Canada plus the cost of transportation to points in Alaska. Any local production in excess of the effective demand may cause prices to fall below this level; but local scarcity will not cause prices to go higher - if the transportation routes from the outside are functioning. Cheaper transportation rates to Alaska would increase the competition from agricultural products of other areas, and would lower the local price differentials that high freight rates have provided.

Highways.- Alaska is one-fifth the size of continental United States; until recently it had fewer miles of roads than the State of Delaware. Roads mostly have been of unpaved gravel, but more than 100 miles of bituminous surfacing was completed in 1949. Plans call for surfacing the main arteries of travel as rapidly as practicable. Road construction and maintenance are expensive on a per capita basis, but roads are essential to settlement and to commerce.

From Great Falls, Mont., truckers hauling from the States drive about 1,000 miles, passing through Edmonton, before reaching Dawson Creek and the start of the Alaska Highway (previously known as the Alcan Highway). From that point it is another 1,527 miles to Fairbanks.

The Hart Highway, to be completed in 1950 according to plans, will connect Vancouver, B. C. with Dawson Creek, by way of Prince George. From States on the West Coast this new route will reduce the over-all distance to Alaska by more than 600 miles.

Highway distances within Alaska are as follows:

Place	Distance
	Miles
Anchorage to -	
Fairbanks via Glenn and Richardson Highway	422
Richardson Highway Jct. via Glenn Highway	190
Valdez via Glenn and Richardson Highway	306
Palmer	48
Fairbanks to -	
Circle via Steese Highway	163
Valdez via Richardson Highway	368

Alaska Agr. Expt. Sta. Cir. 1, 34 pp., illus. College, Alaska, 1941.

Little farm produce moves along the main highways of Central Alaska except between Palmer and Anchorage. A few cases of milk are moved by truck to points along the Glenn and Richardson Highways, as far as Valdez. High transportation costs, small and irregular orders, and the high prices of local milk relative to prices of substitutes, have prevented regular supply to many of the small isolated places. The same is true of other perishable products.

Trucking rates usually are uniform except when large contracts are let. Sample rates on a flat-weight basis from Valdez, the port terminus of the Richardson Highway, are $1.30 per 100 pounds to Palmer, $1.50 to Anchorage, and $1.75 to Fairbanks.

Railroads.- The Alaska Railroad, owned and operated by the U. S. Department of the Interior, runs from the ports of Seward and Whittier through Anchorage to Fairbanks. One branch goes from Matanuska Junction through Palmer to the coal mines about 20 miles up the valley of the turbulent Matanuska River. Installation of heavier rails, and improvements now being made in the roadbed, will enable the railroad to improve the service along its 470.8 miles of track.

Steamships.- Alaska has few good harbors north of the Panhandle. Seward and Valdez are the major civilian ports; Whittier is controlled by the Armed Forces. Anchorage would seem a logical port, but the tides are too high (averaging 28 feet), and the Cook Inlet is blocked by ice during the winter. An improved harbor facility for small boats has been proposed. Its development would aid coast traffic but would not help much with ocean freight.

Current steamship freight charges, wharfage and handling charges, and combination steamship- and rail-freight charges, are shown in tables 6, 7, and 8.

River boats run freight several hundred miles inland during the summer on the Yukon and Kuskokwim Rivers. Freight is also transferred at Nenana from the Alaska Railroad to river boats on the Tanana River. Such transportation is slow, and few highways reach the river landings to carry the goods farther inland from the streams.

Table 6.- Steamship freight charges per 100 pounds and per cubic foot from Seattle to specified ports in Alaska, 1949

Commodity	From Seattle to - Ketchikan		Sitka		Juneau		Seward		Kodiak	
	Per 100 lbs.	Per cubic foot	Per 100 lbs.	Per cubic foot	Per 100 lbs.	Per cubic foot	Per 100 lbs.	Per cubic foot	Per 100 lbs.	Per cubic foot
	Dollars		Dollars		Dollars		Dollars		Dollars	
Grain and grain products	0.60	---	0.85	---	0.75	---	1.15	---	1.25	---
Potatoes and onions 1/	.60	---	.85	---	.75	---	1.15	---	1.25	---
Perishables - lettuce, cabbage, cauliflower, etc. 2/	---	.45	---	.60	---	.55	---	.80	---	.85
Milk, cream, butterfat 3/	1.125	.565	1.50	.75	1.35	.675	1.95	.975	2.10	1.05
Eggs in standard wooden crates 1/	---	.50	---	.65	---	.60	---	.80	---	.825
Meat, fresh 3/	2.50	---	2.75	---	2.70	---	3.75	---	4.00	---
Groceries 4/	.60-.75	---	.85-1.00	---	.75-.90	---	1.15-1.30	---	1.25-1.40	---

1/ Under deck.
2/ Cold room.
3/ Cold storage.
4/ Charges vary according to class of grocery product.

Table 7.- Wharfage and handling charges per short ton or per 40 cubic feet, specified ports, 1949

Commodity	Ketchikan	Sitka	Juneau	Seward	Kodiak	Seattle
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Grain and grain products	3.50	4.00	4.00	3.15	4.00	1.93
Potatoes & onions	3.50	4.00	4.00	2.65	4.00	1.93
Perishables - lettuce, cabbage cauliflower, etc.	3.50	4.00	4.00	3.15	4.00	1.93
Milk, cream, butterfat	3.50	4.00	4.00	3.15	4.00	1.93
Meat, fresh	3.70	4.00	4.00	3.15	4.00	1.93
Eggs in standard wooden crates	3.50	4.00	4.00	3.15	4.00	1.93
Groceries 1/	3.50-5.25	4.00-6.00	4.00-6.00	3.15	4.00	1.93-2.89

1/ Per ton only. Charges vary according to class of grocery product.

Table 8.- Combined steamship-rail freight charges and handling costs per 100 pounds on carlots from Seattle to specified points in Alaska, 1949

Commodity	From Seattle, Washington to -		
	Anchorage	Palmer	Fairbanks
	Dollars	Dollars	Dollars
Grain and grain products	1.73	1.83	2.21
Potatoes and onions	1.76	2.11	2.48
Groceries	2.25	2.86	3.47
Perishables - lettuce, cauliflower, etc. (any quantity)	2.42	3.02	4.17
Meat - fresh	6.07	6.61	8.92
Lumber	1.44	1.52	1.83
Roll roofing	2.59	2.86	4.01
Insulating material	2.14	2.34	3.10
Wall board	1.65	1.77	2.24
Cement or plaster	1.52	1.65	2.03
Iron and steel	2.26	2.51	3.47
Agricultural implements (any quantity)	1.30	1.43	1.43
Vehicles (any quantity)	6.41	6.75	7.51
Fuel oil and gasoline	.31	.41	1.41

Data furnished by freight agent of Alaska Railroad, Palmer, Alaska.

Air Transport.- The use of air freight and express to serve Alaska is said to be more than 200 times greater per capita than in the continental United States. Passenger traffic per capita also is much greater than in the States, because of the limitations of surface transport. There are probably about 30 air companies doing business in Alaska, and scores of individual pilots fly for hire.

Air freight rates in Alaska vary, depending upon the area to be serviced, the potential payload, the possibilities for payload both ways, and the types of equipment used. (Fig. 4.)

Figure 4.- Potatoes, the major cash crop of Alaska farms, are moved chiefly by truck or rail. Some high-value perishables, such as strawberries from Homer, Alaska, are shipped by plane to outlying markets. (Lower photograph courtesy BPISAE)

FUTURE MARKETS FOR PRODUCTS OF ALASKA CROPLAND

Predictions of future markets for the agricultural products of any area involve many uncertainties. For Alaska, these are magnified by at least five important factors.

1. Decided limitations of present agricultural development as an indicator of the type, volume, and quality of products to be marketed in the future.

2. Scarcity and limitations of existing data on present production and utilization of agricultural products.

3. Varying numbers of military personnel and Government civilian employees, with their dependents and service population, who together make up the major part of the market. Combined activities of Government (Federal and Territorial) comprise Alaska's major "industry," the future size of which cannot be predicted.

4. Lack of a present basis for estimating the extent of the natural resources, or the rate of their development, and the size of the population that will be supported thereby.

5. Obstacles to development of an adequate marketing system for local farm products, such as the scattering of population over great distances; impediments to transportation by mountains, forests, and swamps; and rigors of winter weather.

Numerous assumptions must be used therefore, as the basis for the estimates of future markets. These assumptions are varied; at the risk of tediousness to the reader, they are listed in detail on following pages.

The assumptions are based upon available information, and upon the informed judgment of farmers, marketers, and others who have observed and studied Alaska's agriculture and its marketing problems. But they are assumptions. They are believed to be reasonable, but only time can test their degree of accuracy. The estimates of future utilization of farm products are indicated by a range of quantities, to allow for some of the uncertainties and possibilities.

Assumptions

Areas of Production.- In this evaluation of future markets, it is assumed that the developed cropland will continue to be almost entirely in that part of the mainland of Alaska that extends from the vicinity of Fairbanks to the Kenai Peninsula. There is little land in southeastern Alaska that is suitable for farming. In the great stretches of western Alaska there is now no indication of any type of development that would support agricultural production. North of the Arctic Circle, hardy cool-weather vegetables are grown, but climatic limitations preclude commercial agriculture there.

Kodiak and its neighboring islands, the Aleutians, and the Alaska Peninsula, offer favorable grazing for cattle and sheep. Much of the meat consumed in Alaska may come eventually from those sections. But such livestock enterprises would be based upon the grazing of the native grasses, and not upon the use of those areas for cropland. This report is confined to the products of cropland - that is, of land that is cleared, and cultivated or seeded to perennial forage plants, or that will be so used in the future.

Types of Production.- It is assumed that no "new" crops will be found to be adapted to the area that can be produced or marketed in volume large enough to result in any material modification of the present types of agriculture. But it is assumed that new or improved strains or varieties of the small grains, forage and pasture plants, potatoes, and vegetables, will be developed or introduced, whereby yields will be increased or quality improved, or both. Presumably much may be done in this direction; some advance may come from research already under way. It is assumed also that improved practices of production, handling, and storage, will be developed and adopted, so that greater net yields of marketable commodities will be realized from the food and feed crops produced. It is assumed that by a combination of these developments, yields per acre of the products of cropland in Alaska may be increased by 20 percent over present usual yields, within the next 10 or 15 years.

It is assumed that grain, forage, and pasture crops from local cropland will continue to be used almost entirely for the production of milk, eggs, and small quantities of pork, and will not be used to any appreciable extent for beef cattle or sheep. Some farmers will grow out a few calves of the dairy breeds to supply their own meat, and cull dairy cows will be slaughtered for local use. Except for dairy beef, however, and a small quantity of pork, it is assumed that meat will not be produced from local cropland in competition with the prices at which meats from southwestern Alaska, or from the States and Canada, can be laid down at local retail stores.

It is assumed that at comparative costs of feed and labor, dairymen in Alaska will not regularly produce milk for the manufacture of cheese or butter, in competition with these concentrated and high-value-per-pound products shipped in from the States or from Canada. Some milk may be so used from the summer flush production. It is assumed, however, that only as many dairy cows will be kept in Central Alaska as will be needed for the winter supply of fluid milk for the resident population. As pointed out earlier, the additional summer requirements of seasonal workers and visitors, and for the manufacture of ice cream, will be supplied by the normal flush production of this same number of cows.

Location of the market.- It is assumed that the market for the products of cropland in Central Alaska will continue to be the white civilian population in the mainland of Alaska and military personnel stationed there. It is assumed that no such products will be shipped out in substantial quantity, even to the towns of the Panhandle.

General Economic Conditions and Demand Levels.- Alaska has had extremely wide variations in economic conditions, varying from boom and rapid expansion of certain local areas, to depression and sharp contraction. Thus the city of Fairbanks is reported to have had, during gold rush days, a population exceeding its estimated 8,500 in 1948, and then to have dropped back to only a few hundred residents. For the last several years the Territory has been in a boom stage, primarily because of increases in the military forces stationed there, and of the construction and maintenance of military or semi-military installations. These have included extensive road construction, the building of many airports and landing strips, harbor development, and improvement of rail facilities, in addition to the expansion of military bases. The combined activities of Government (Federal and Territorial) now comprise the major "industry" of Alaska. Important agencies are the Alaska Native Service, Alaska Railroad, Alaska Road Commission, Agricultural Research Administration, Civil Aeronautics Administration, Farmers Home Administration, Geological Survey, Bureau of Land Management, Soil Conservation Service, University of Alaska, and the Veterans Administration, in addition to the several branches of the Armed Forces. Relatively high wages have been paid to attract the workers needed for these activities, prices of consumer goods have been high, and a boom psychology has prevailed. When this report was being prepared, there was no evidence of a development of natural resources on which the current levels of business in Central Alaska might be maintained, if there should be a substantial reduction in construction and other activities by governmental agencies.

Further swings are bound to occur in the levels of local business and economic conditions while present settlers, or those who will become settlers within the next few years, are farming their land. It is assumed that the long-time average rate of local consumer demand will be somewhat lower than during 1948-1949. Under such conditions, the white population of the mainland probably would retain their usual levels of total food consumption, but they might reduce their purchases of the relatively high-cost perishable products. Thus they might buy less fresh milk, and more canned.

Any general or sustained declines in the prices of milk, eggs, and vegetables in the United States (or of eggs, at least, in Canada) would result in a lowering of corresponding ceiling prices in Alaska. For it is to be remembered that the maximum retail price in Alaska for locally grown products is the Stateside or Canadian market, plus transportation and handling costs, plus or minus such differentials as normally prevail between shipped-in and local products. If price levels of agricultural products continue to decline in the United States, so will such price levels decline in Alaska.

Size of the Potential Market

Estimates are not available of the future population of Alaska, either civilian or military. Therefore in this report the prospective future marketing possibilities are expressed as the annual quantities

of the products of Alaska cropland that may be utilized by 10,000 year-round white residents of the mainland of Alaska, civilian and military. Multiples of such quantities then will represent the estimated potential market that would be provided by populations of corresponding multiples of 10,000.

These quantities of farm products then are converted to equivalent acreages of Alaska cropland that may be needed for their production. Such acreages are calculated at the indicated yields of crops, the feed requirements of dairy cattle, chickens, and hogs, and estimated proportions of the feed grain that will be grown on local cropland.

These acreages are first calculated at the present usual yields of crops in Central Alaska, as indicated in the companion report "Some Economic Aspects of Farming in Alaska ---."13/ Then, in accordance with an assumption previously outlined, they are also calculated at yields 20 percent higher than present usual yields, which may be attained within the next 10 or 15 years.

Rates of Per Capita Consumption .- The present farms in Central Alaska are not fully supplying the local demand for the limited crops and livestock products that are adapted to the area. In part, this is due to lack of adequate facilities for assembly, storage or processing, and distribution to the local population. The estimates here presented of potential future market outlets are based on the assumption that reasonably adequate and effective facilities will be developed within the next few years, whereby the products of Alaska farms will be made available to nearly all of the potential consumers. This probably is an optimistic assumption. It is one of the factors represented in the upper range in estimated quantities that may be marketed, in the following tabulations.

Future requirements of the Alaska market are calculated on assumed rates of per capita consumption by the white population, civilian and military. Information is not available on the quantities of foods now consumed in the Territory, therefore the per capita rates are derived from the United States average annual rates,14/ with certain modifications. These are listed in table 9, for the commodities now produced from cropland in Alaska. Column 1 lists the average United States annual per capita consumption of such products. Column 2 shows the estimated consumption in Alaska of such products from all sources - that is, both shipped-in and those produced on local cropland. The remainder of table 9 applies only to that part of the total consumption in Alaska that is expected to be supplied from Alaska cropland.

13/ See footnote 2, p. 5 .

14/ United States Bureau of Agricultural Economics. Consumption of Food in the United States, 1909-48. U. S. Dept. Agr. Misc. Pub. 691, 196 pp., illus. 1949.

Table 9.- Estimated present and potential consumption of products of Alaska cropland, per capita and per 10,000 and 50,000 white residents, compared with United States, and potential Alaska per capita consumption of such products from all sources

Commodity	Per capita consumption from all sources		Marketing period of Alaska products	Estimated consumption of products of Alaska cropland			
	U. S. average 1944-48 1/	Alaska estimated potential		Present per capita	Potential range		
					Per capita	Per 10,000 residents	Per 50,000 residents
	Number	Number	Weeks	Number	Number	Thousands	Thousands
Animal products:							
Eggs	379	350	52	70	2/ 160-190	1,600-1,900	8,000- 9,500
	Pounds	Pounds		Pounds	Pounds	1,000 Pounds	1,000 Pounds
Chickens	26	24	52	5	2/ 13- 16	130- 160	650- 800
Milk, fluid	412	3/ 400	52	100	4/ 200-300	2,000-3,000	10,000-15,000
Pork	72	5/ 80	52	2	6/ 8	- 80	- 400
						Tons	Tons
Potatoes	122	7/ 145	8/ 36	75	85-110	425- 550	2,125- 2,750
Vegetables:							
Beets	5	6	24	3	4- 6	20- 30	100- 150
Broccoli	1	1	4	1	1	5	25
Cabbage	39	40	20	20	15- 25	75- 125	375- 625
Carrots	13	15	28	8	10- 16	50- 80	250- 400
Cauliflower	4	3	8	2	1- 2	5- 10	25- 50
Celery	12	12	11-1/2	6	4- 8	20- 40	100- 200
Greens	8	4	10	4	3- 5	15- 25	75- 125
Lettuce	21	15	12	8	8- 12	40- 60	200- 300
Onions, green	---	3	10	2	1- 2	5- 10	25- 50
Radishes	---	3	12	2	1- 2	5- 10	25- 50
Turnips and rutabagas	2	4	28	2	2- 3	10- 15	50- 75
Peas, pod	4	3	3	1	1- 2	5- 10	25- 50
Small fruit:							
Currants	---	13	9/ 52	---	6- 15	30- 75	150- 375
Raspberries	---	13	9/ 52	1	8- 15	40- 75	200- 375
Strawberries	---	13	9/ 52	4	8- 15	40- 75	200- 375
Other berries	---	6	9/ 52	---	4- 8	20- 40	100- 200
Rhubarb	---	12	6	4	2- 5	10- 25	50- 125

1/ See footnote 14, p. 39.

2/ Assumed that all the eggs will be produced from laying flocks located in Alaska, but that only half the feed will be grown on Alaska cropland, the remainder being of shipped-in ingredients. See footnotes 2 and 3 of table 10.

3/ Consumption of fresh fluid, canned, and dried milk, in whole-milk equivalents.

4/ Assumed that between one-half and three-fourths of the milk used will be locally produced fresh fluid, and the remainder will be canned, dried, or other processed milk.

5/ Total pork consumption estimated at 80 pounds compared with U. S. average of 72 pounds because ham, bacon, and other cured products are used extensively, especially where fresh meat is scarce.

6/ See footnote 5 of table 10.

7/ Potato consumption assumed to be well above U. S. average because other vegetables are less plentiful or available, and because high-calorie diets are needed in the cold climate.

8/ Assumed that Alaska-grown potatoes will constitute the major supply for 9 months (early September through early June) but that the equivalent of 1 month's consumption during that period will be of Russet Burbanks (Netted Gems) and of new-crop potatoes in the spring, shipped in from the States.

9/ Including fresh, canned, and frozen fruit and juice.

The per capita rates in Column 2 (of supplies from all sources) probably are not being reached now for many of these commodities, partly because of lack of an adequate system of distribution. They are assumed to be the potential rates of consumption when more adequate distribution has been developed, particularly for fluid milk and fresh vegetables.

The lengths of the marketing periods of the Alaska-grown products are listed in Column 3, ranging from as little as 1 month of the year to the full 12 months.

In Column 4 are indicated, for comparisons only, what may be the current average rates of local consumption of Alaska products, under the present limited supply and the existing facilities for distribution.

In Column 5 are the ranges of estimated potential per capita consumption of the products of Alaska cropland. These are based upon the estimated totals from all sources, (Column 2), modified by two considerations:

1. The length of the marketing season, or period of availability, of the Alaska product,

2. For the animal products, the proportion expected to be produced from feed grown on cropland in Alaska. Thus all the eggs used in Alaska eventually may be produced by laying flocks located in Alaska. It is assumed, however, that only half the egg supply will be produced from grain grown on Alaska cropland, and that the remainder will be of eggs shipped-in or produced from shipped-in feed.

It is assumed that under conditions most favorable for local dairymen, three-fourths of the milk used will be Alaska-produced fresh fluid milk, and the remainder will be evaporated or dried, or perhaps frozen fluid for outlying military posts. Evaporated milk is so thoroughly accepted as a staple food product in Alaska that it probably will continue to be used to a large extent, particularly because of its convenience and nonperishability. Retail prices of fluid milk will probably continue high because of high costs of production. Under conditions of moderate-to-low economic activity and consumer incomes, greater proportions of evaporated and dried milk would be used, and local fresh fluid might supply only about half of the total milk-equivalent used.

Other competitive possibilities are canned whole milk, or frozen concentrated milk, on which research is under way. The canned whole milk would have the full volume and weight of fresh milk, but it could be shipped to Alaska by boat at much lower transportation cost than either the frozen fluid under refrigeration, or the fresh fluid by air freight. The frozen concentrated milk would be greatly reduced in bulk and weight. If either of such products proves satisfactory to consumers, it may give serious competition to producers of fresh milk under the high costs that will be unavoidable in Alaska. It is here assumed, however, that dairymen in Central Alaska will be able to provide at least one-half of the total fluid milk equivalent used by the local population.

A liberal use of small fruits is assumed. These and the native wild berries are the only local fruit now available. No other cultivated fruits have yet been adapted. Fresh fruit shipped in from the States will continue to be relatively high priced because of the costs of refrigeration and transportation, and possible losses from spoilage. Canned fruits also must bear a considerable transportation cost. It is assumed that currants, strawberries, raspberries, and other cane berries, will be grown on a considerable scale to meet the general demand for some sort of fruit in the diet. The chief form of preservation of these small fruits probably will be in frozen-food-locker plants, where they can be available for year-round use. As only small quantities have been grown, there is as yet little basis on which to judge the extent to which they may be used in the future. The maximum of the range of quantities indicated in table 9 probably is optimistic in terms of potential land use.

There are minor differences between the rates of consumption by civilian and by military personnel. Thus the master menu of the Armed Forces in Alaska calls for about 75 percent more potatoes per capita than the estimated civilian consumption. In terms of potato acreage, however, this would mean that 10,000 military personnel would need only about 6 acres more Alaska-grown potatoes per year than the same number of civilians. The current master menu calls for about the same quantity of milk per capita as the estimated potential consumption by Alaska civilians. The use of fresh vegetables in season may be slightly higher by the civilians. The net differences for the two groups are extremely small in the acreages of cropland that would be required.

Population estimates in 1948 indicated that the white civilian residents of the Alaska mainland totaled about 40,000. The numbers of military personnel stationed there, or to be stationed there, are not known. If the military forces are around 10,000, the current market would consist of around 50,000 resident consumers. To the extent that the military forces number more or less, the size of the market varies accordingly. Table 9, (Columns 6 and 7), shows the quantities of the various products of Alaska cropland which would be utilized by 10,000 and by 50,000 residents, based upon the estimated annual per capita rates.

Acreages of Cropland Needed

In table 10 are listed the acreages of Alaska cropland that would supply 10,000 residents with the quantities of products listed in table 9. These acreages are calculated at two rates of yield per acre - the present usual yields, and yields 20 percent higher than present, which are shown in Columns 1 and 2 (table 10).

For each 10,000 resident white population, civilian and military, the total cropland requirements are indicated at approximately 3,000 to 4,100 acres at present yields; or 2,500 to 3,400 acres at the higher yields. The percentage distribution of the acreages for each group of products is as follows:

Commodity	Percentages of total acreage 1/
	Percent
Animal products:	
Eggs and chickens	32 - 27
Milk, fluid	54 - 59
Pork	7 - 5
Total	93 - 91
Potatoes, vegetables, and small fruits:	
Potatoes	2 - 2
Vegetables	2 - 2
Small fruits	3 - 5
Total	7 - 9
Grand total	100 - 100

1/ Percentage distribution of the lower and upper limits, respectively, of the range of acreage needed for each group of products.

By type of feed crop, the hay, silage, and pasture would account for about half of the total acreages, and grain would account for 40 to 45 percent - on the assumption that half the grain for dairy cows and chickens would be grown on local cropland. Field studies made in 1948 15/ indicated that about 50 percent of the grain required by dairy farms in the Matanuska Valley was produced on those farms. Some rather large dairies grew only hay, silage, and pasture; their concentrates were all shipped in. Most of the chicken feed has been of shipped-in mashes. In the Fairbanks area, only small acreages of grain have been grown in recent years, and none has been threshed during the last three seasons. The two commercial dairies at Fairbanks ship in all of their concentrate feed, and some alfalfa hay.

15/ The studies on which are based the companion report "Some Economic Aspects of Farming in Alaska, with Chief Attention to the Matanuska Valley." See footnote 2, p. 5.

Table 10.- Estimated present usual, and 20 percent higher, yields per acre of products of cropland in Central Alaska, and range in acreage at each yield needed to supply potential consumption by 10,000 residents, white civilian and military 1/

Commodity	Estimated yield per acre		Estimated range of acreage needed to supply consumption by 10,000 white residents	
	Present usual 2/	20 percent higher than present usual	At present usual yields	At 20 percent higher than present usual yields
	Feed crops for animal products			
	Tons	Tons	Acres	Acres
Hay	1.7	1.9		
Silage	5.8	6.9		
	Bushels	Bushels		
Wheat	23.9	28.7		
Oats	42.7	51.2		
Barley	35.1	42.1		
Mixed grain	31.3	37.6		
Grain for: egg production 3/			865-1,030	720- 860
chicken production 4/			75- 95	60- 80
pork production 5/			215- 215	180- 180
milk production 6/			195- 290	160- 240
Roughage and pasture: for milk			1,410-2,125	1,175-1,770
Total milk 6/			1,605-2,415	1,335-2,010
Total animal products			2,760-3,755	2,295-3,130
	Potatoes, vegetables and small fruits			
	Tons	Tons	Acres	Acres
Potatoes	6.2	7.4	70- 90	55- 75
Vegetables:				
Beets	5	6.0	4- 6	3- 5
Broccoli	3	3.6	1- 2	1- 2
Cabbage	10	12.0	8- 13	6- 10
Carrots	5	6.0	10- 16	8- 13
Cauliflower	5	6.0	1- 2	1- 2
Celery	10	12.0	2- 4	2- 3
Greens	3	3.6	5- 8	4- 7
Lettuce	6	7.2	7- 10	6- 8
Onions, green	4	4.8	1- 3	1- 2
Radishes	3	3.6	2- 3	2- 3
Turnips and rutabagas	5	6.0	2- 3	2- 3
Peas, pod	2	2.2	3- 5	2- 5
Total vegetables			46- 75	38- 63
Small fruits:				
Currants	1.4	1.7	21- 54	18- 44
Raspberries	1.4	1.7	29- 54	23- 44
Strawberries	1.4	1.7	29- 54	23- 44
Other berries	1.4	1.7	14- 30	12- 23
Rhubarb	10.0	12.0	1- 2	1- 2
Total small fruits			94- 195	77- 157
Total potatoes, vegetables and small fruits			210- 360	170- 295
GRAND TOTAL			2,970-4,115	2,465-3,425

1/ Quantities for consumption indicated in table 9. 2/ Estimated present usual yields of potatoes, cabbage, carrots, celery, lettuce, hay, silage, and grains from "Economic Aspects of Farming in Alaska, with Chief Attention to the Matanuska Valley" (see footnote 2, p.5). Present usual yields of other products estimated from information furnished by producers and marketing agencies in Alaska, or from information obtained from other producing areas. 3/ Assumed 130 eggs per hen, and 100 pounds feed per hen, of which 40 pounds wheat and 10 pounds oats produced locally, and 50 pounds shipped-in feed ingredients. 4/ Assumed annual change of laying flock; 30 percent mortality and 70 percent marketable hens, and average dressed weight per hen of 4 pounds. This would provide 70,000 to 80,000 pounds of chicken meat as a byproduct of egg production. Remainder is assumed to be 60,000 to 80,000 pounds of broiler meat, produced at a meat-feed ration of 1:3.5 with 50 percent of ration consisting of wheat produced locally, and remainder shipped-in feed ingredients. 5/ Assumed that 10 percent of the pork products consumed will be produced from feed grown on Alaska cropland (this will not include garbage-fed hogs). Assumed average liveweight 225 pounds, dressing 75 percent. Feed equivalent to 450 pounds grain per 100 pounds liveweight, of which 75 percent (338 pounds) would be grain produced locally and remainder vegetables, cooked cull potatoes, etc. 6/ Including milk used in cottage cheese and ice cream. Assumed annual production of 7,200 pounds of milk per cow, and that hay, silage, pasture, and half the grain feed, will be produced on local cropland. The indicated acreages would supply feed for the dairy herds, including young stock for replacements. "Acres of cleared land required per cow" (with modification to include only half the grain feed) from "Some Economic Aspects of Farming in Alaska - - -." (See footnote 2, p. 5.)

Some farmers will produce most, or all, or their grain feed, but experience to date indicates that many of the specialized dairymen and egg producers will not grow grain, but will buy their concentrates. Some of this may be bought from other farmers in the area. But there is no present indication that grain farming will become a commercial enterprise on Alaska cropland. Reasons include the high costs of production, the uncertainties of maturing the grain before freezing, and the difficulties of harvesting and drying it for storage during the rainy weather that usually prevails at harvest time. It is believed that grain will be grown primarily to supplement dairying or other farm livestock enterprises, with only limited quantities, or occasional surpluses, available for sale.

It may be noted that no acreages are indicated for growing feed for horses. Very few horses are used in Alaska. Tractors and trucks predominate heavily.

In table 11, the cropland use for each of the groups of products for 10,000 white residents of the Mainland of Alaska has been extended to the acreages needed to supply the potential consumption by 40,000, 50,000, and 60,000 such residents, respectively. In round numbers, these total as follows:

Population	At present usual yields	At yields 20 percent higher
	Acres	Acres
40,000	12,000 - 16,000	10,000 - 14,000
50,000	15,000 - 21,000	12,000 - 17,000
60,000	18,000 - 25,000	15,000 - 21,000

Table 11.- Estimated range in acreage of cropland in Central Alaska to supply potential consumption by selected levels of white civilian and military population, at two rates of yield per acre 1/

Commodity	By population					
	40,000 population		50,000 population		60,000 population	
	At present usual yields	20 percent higher than present usual yields	At present usual yields	20 percent higher than present usual yields	At present usual yields	20 percent higher than present usual yields
	Acres	Acres	Acres	Acres	Acres	Acres
Animal products:						
Eggs & chickens	3,760- 4,500	3,120- 3,760	4,700- 5,625	3,900- 4,700	5,640- 6,750	4,680- 5,640
Milk, fluid	6,420- 9,660	5,340- 8,040	8,025-12,075	6,675-10,050	9,630-14,490	8,010-12,060
Pork	860- 860	720- 720	1,075- 1,075	900- 900	1,290- 1,290	1,080- 1,080
Total	11,040-15,020	9,180-12,520	13,800-18,775	11,475-15,650	16,560-22,530	13,770-18,780
Potatoes, vegetables and small fruits:						
Potatoes	280- 360	220- 300	350- 450	275- 375	420- 540	330- 450
Vegetables	184- 300	152- 252	230- 375	190- 315	276- 450	228- 378
Small fruits	376- 780	308- 628	470- 975	385- 785	564- 1,170	462- 942
Total	840- 1,440	680- 1,180	1,050- 1,800	850- 1,475	1,260- 2,160	1,020- 1,770
Grand total	11,880-16,460	9,860-13,700	14,850-20,575	12,325-17,125	17,820-24,690	14,790-20,550

By yield 2/

Population	Present usual yields	20 percent higher than present usual yields
	Acres	Acres
40,000	12,000 - 16,000	10,000 - 14,000
50,000	15,000 - 21,000	12,000 - 17,000
60,000	18,000 - 25,000	15,000 - 21,000

1/ Computed from table 10. Total acreages, including present cropland.
2/ Data rounded to thousands.

The total cleared cropland in Central Alaska at the end of 1949 was estimated at 12,500 acres. Under the least favorable assumptions that have been outlined for the use of Alaska-grown products, a resident white population of 60,000 on the Mainland would need a total of 18,000 acres, or only 5,500 in addition to the present cropland; with improved yields only 2,500 additional acres would be used. (Table 12.) Under the most favorable assumptions, such a population would need 12,500, or 8,500 more acres, respectively, than are now cleared.

For a resident white population of 50,000, which probably is in excess of the present effective market, not more than 2,500 acres of cropland in addition to the 12,500 already cleared would be required at present yields and at the less favorable conditions of land use; if yields were increased, no more acreage would be needed than has already been cleared in Central Alaska.

Not all of the present cropland may be in advantageous locations to supply local markets, and some of it may be undesirable because of soil, drainage, "frost pockets," or other conditions. Some additional clearing and cropland development may be needed to replace acreage that may be abandoned for these or other reasons, but such replacement is likely to be small in relation to the total.

Table 12.- Estimated range in acreage of cropland in Central Alaska needed for selected levels of white residents compared with present acreage 1/

Population	Present cropland used or idle 2/	Estimated range of cropland needed		Increase or decrease from present acreage	
		Present usual yield	20 percent higher than present usual yield	Present usual yield	20 percent higher than present usual yield
	Acres	Acres	Acres	Acres	Acres
40,000	12,500	12,000-16,000	10,000-14,000	(-500)- 3,500	(-2,500)-1,500
50,000	12,500	15,000-21,000	12,000-17,000	2,500 - 8,500	(-500)-4,500
60,000	12,500	18,000-25,000	15,000-21,000	5,500 -12,500	2,500 -8,500

1/ Data from table 11, rounded to thousands.

2/ Local estimates indicated that of 12,500 acres total cropland, not more than 9,000 acres were in crop, meadow or pasture during 1949, and the remaining 3,500 acres were idle.

Livestock Numbers

The livestock requirements for a white population on the Mainland of 50,000 would be approximately as follows:

Milk: if 50 percent of the whole-milk equivalent were supplied by local dairies (and the remainder were canned, dried, or in other processed form) about 1,600 cows would be needed; if 75 percent were supplied locally, about 2,400 cows, at the assumed annual production of 7,200 pounds per cow.16/ This would be the number of cows required to supply the resident population during the winter, assuming that at the low point of the winter milk flow, the production would average about 15 percent below the yearly average.

Eggs: about 125,000 to 150,000 laying hens would be required if all the eggs were to be produced by flocks located in Alaska (but for which it is assumed that only half the feed would be produced in Alaska).

Hogs: at 225 average liveweight per hog, 2,400 hogs would be slaughtered annually. This would not be all the pork produced in Alaska, however. Many hogs are produced from garbage, most of which is obtained from the military posts.

Where Should Additional Cropland be Developed?

Until there is considerable increase in the population to be supplied from cropland in Central Alaska, important considerations suggest that the additional farmland that may be needed should be developed in areas where settlement is already under way and where transportation to market is available. For the most part it should be developed on existing farms. There are two basic reasons: (1) The present farmers need more cleared land for efficient farm operation and to provide an adequate family income, and (2) such additional cropland as may be needed would not provide an adequate base for a new farming community, in an area now undeveloped. Neither would it provide a sufficient volume of products to make possible a reasonably good marketing system from a new area. Adequate and efficient facilities for assembly, processing or storage, and distribution of perishable products such as fluid milk, potatoes, and vegetables - major products of Alaska cropland - cannot profitably be developed or continued in scattered areas of small production. The entire volume of such products that can be utilized in Alaska is very small compared with similar operations in the States. If Alaska farmers are to realize the major part of their

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16/ In the Matanuska Valley in 1947, records of 30 dairy herds ranging from 4 to 20 cows (a total of 325 cows), had an average production of 7,200 pounds per cow. "Some Economic Aspects of Farming in Alaska, with Chief Attention to the Matanuska Valley." See footnote 2, p. 5 .

potential market, they must be able to concentrate their products at the points of effective demand, and that can be done profitably only with some considerable volume. For example, motortrucks travel long distances between farms or between communities in daily collection of fresh milk only at high cost per unit of product. Grading according to accepted standards, and proper preparation of vegetables for market, can be done at reasonable cost only when considerable volumes can be assembled regularly at central points.

The companion report, "Some Economic Aspects of Farming in Alaska ---"17/ points out that, in the Matanuska Valley, about 120 acres of cleared land may be needed to operate a full-time 15-cow dairy farm. Yet nearly three-fourths of the farmers in the Valley had less than 41 acres cleared, or only a third or less of the land needed for a full-time dairy farm, when this study was made. In this same area, where most of the agriculture in Alaska is located, it has been estimated that less than one-fifth of the tillable land is now cleared.

Reference is made again to table 12, and to the acres of cropland needed for selected levels of population. At the present usual yields, between 2,500 and 8,500 acres of additional cropland would be needed for a population of 50,000 - if present cropland is fully utilized. If the average net marketable yields of crops should be increased, the needed acreages would be reduced proportionally. In the Matanuska Valley alone, 187 owners of land were reported in 1947 to have only 5,819 acres cleared - an average of 31 acres per farm. Most of these units contained additional land that might be cleared, and they were intermingled with other undeveloped lands. The clearing of 2,500 additional acres in this area would give an over-all average of 44 acres per unit; the clearing of 8,500 acres would provide an average of 76 acres, if absorbed into these 187 ownerships. Similar conditions prevail in parts of the Kenai Peninsula, and around Fairbanks.

The cost of clearing land that is suitable for farming is estimated to range generally between $100 and $200 an acre, depending on the size and density of the standing timber, the method used, and the labor hired. This cost is for clearing the land only - exclusive of all later investment in buildings, fencing, equipment, and livestock, and of capital for operating until profits are accumulated. These costs are a basic reason why so many of the present settlers are farming so few acres. If aid is to be extended by public agencies toward further land clearing in Alaska, it would appear to be the course of wisdom to first concentrate such aid in the areas where a considerable number of settlers already are partially established, but have been unable to get fully enough established to do a good job of farming, or to make enough income from their farms for what is usually considered a satisfactory level of living for their families.

17/ See footnote 2, p. 5.

The market for products of Alaska cropland is sharply limited. After the local civilian and military population is supplied with the adapted products, there is no more market. Under such conditions, relatively small surpluses can bring sharp declines in prices, and can have disastrous effects on the returns to all producers. Over-expansion of cropland in Central Alaska might mean severe losses, not only to those settlers who attempt to develop new land, but to all the present farmers as well.

The public lands that can be homesteaded are not ready for the plow, as was much of the land that was homesteaded in the prairie States of our country. The costs of development must be amortized over long periods. Settlers therefore need reasonable assurance of long-time markets before they begin such operations. This is particularly true of dairy farming, which requires outlay for buildings and livestock as well as for other development.

The Armed Forces offer to the settlers in Alaska an important market. It should be examined with care, however, because of its uncertain size in the future. The strength of the Armed Forces stationed in Alaska may vary rather widely from time to time. If cropland should be developed with which to supply a certain number of military personnel (additional to the civilian market) and then this number should be reduced, there would be no place to take products that the Quartermaster Corps might otherwise have purchased. The size of the civilian market also fluctuates with the size of the military, because a rather large proportion of the civilians are military dependents or are employed in the service industries. Also many civilians are employed on military construction and maintenance of various kinds. Indirectly, as well as directly, the Armed Forces represent a large part of the market for the products of Alaska cropland. The Armed Forces can fill more or less of their requirements of milk, potatoes, and vegetables from sources other than local cropland, if the numbers of military personnel stationed in Alaska increase or decrease. Production by Alaska farmers, once established, has no such flexibility in its market.

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